SDP-EP70/EP90ES

SERVICE MANUAL

AEP Model
UK Model
Australian Model

Photo: SDP-EP90ES (GOLD)

This processor incorporates the Dolby Pro Logic Surround system.
Manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby ," the double-D symbol ◻◻, "AC-3" and "Pro Logic" are trademarks of Dolby Laboratories Licensing Corporation.

SPECIFICATIONS

Digital inputs	Optical: 3 Coaxial: 1 AC-3 RF: 1
Digital outputs	Optical: 1
Bypass inputs	FRONT (L R), REAR (L R), CENTER, WOOFER
Analog outputs	FRONT (L R), REAR (L R), CENTER, WOOFER: Output level: 1V Output impedance: 1 kilohms
BASS BOOST	+5 dB at 60 Hz

Power requirements	220 - 230 V AC, 50/60 Hz
Power consumption	50 W
Dimensions	430 x 98 x 355.5 mm (17 x 3 7/8 x 14 in)
Mass (Approx.)	6.5 kg (14 lb 5 oz)
Supplied accessories	• Remote commander (remote) (1) • Size AA (R6) batteries (2) • Connecting cords (3)

Design and specifications are subject to change without notice.

DIGITAL SURROUND PROCESSOR

MICROFILM

SONY®

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Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

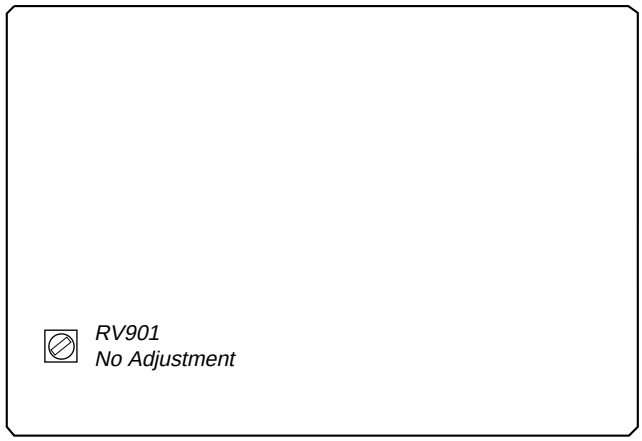
SECTION 1
SERVICING NOTE

RV901 of Main Board

RV901 of the main board requires no adjustments. Please note that it should be dixed to mechanical center position when you moved and do not know origin position.

Parts Location:

[MAIN BOARD] – SIDE A –



Connection and Test Disc

Connection of this unit to a AC-3 Dolby surround equipment will realize outstanding sound playback.
Check if the respective surround channel outputs are playing back normally by the following method.

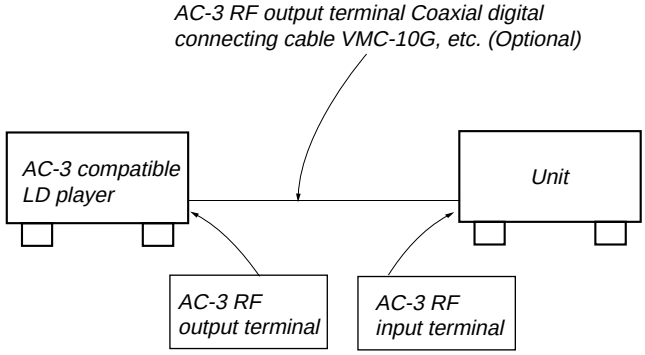
Jig :

Discription	Part No.
AC-3 TEST LD	J-2501-132-A

Connected Equipment:

AC-3 LD player
(This unit is also compatible with the digital versatile disc player (DVD). The DVD must be checked with the LD player using all the circuits of this unit.)

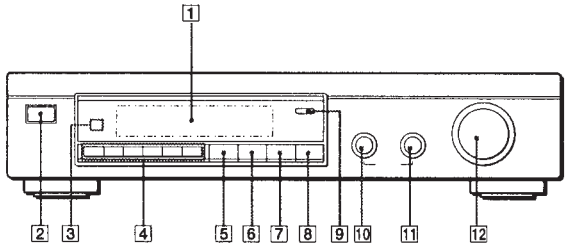
Connecting Method:


AC-3 RF output terminal Coaxial digital connecting cable VMC-10G, etc. (Optional)
AC-3 compatible LD player
Unit
AC-3 RF output terminal
AC-3 RF input terminal

Checking Method:

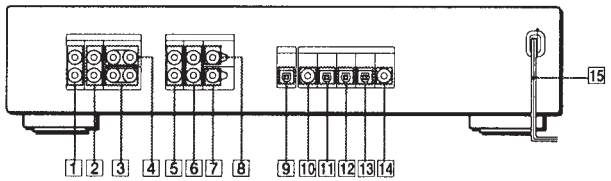
Play back a test disc of the LD player, and check if the contents recorded on the disc case (printed on the disc case) are played back normally.

Front Panel Descriptions



1 Display
2 POWER
3 Remote sensor (centre)
4 INPUT selectors
5 BASS BOOST
6 MPEG/DOLBY DIGITAL
7 MODE
8 OFF
9 SET UP
10 MENU
11 +/–
12 MASTER VOLUME

Rear Panel Descriptions



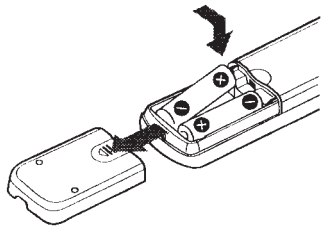
1 FRONT L (left) and R (right) OUTPUT
2 REAR L (left) and R (right) OUTPUT
3 WOOFER OUTPUT(s)
4 CENTER OUTPUT(s)
5 FRONT L (left) and R (right) BYPASS INPUT
6 REAR L (left) and R (right) BYPASS INPUT
7 WOOFER BYPASS INPUT
8 CENTER BYPASS INPUT
9 DIGITAL OUTPUT (optical)
10 DIGITAL INPUT 4 (coaxial)
11 DIGITAL INPUT 3 (optical)
12 DIGITAL INPUT 2 (optical)
13 DIGITAL INPUT 1 (optical)
14 AC-3 RF INPUT
15 Mains lead

Unpacking

Check that you received the following items with the processor:
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)
- Connecting cords (3)

Inserting batteries into the remote

Insert two size AA (R6) batteries with the + and – on the battery compartment. When using the remote, point it at the remote sensor ■ on the processor.



When to replace batteries

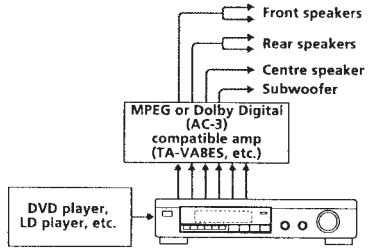
Under normal use, the batteries should last for about 6 months. When the remote no longer operates the processor, replace both batteries with new ones.

Notes
- Do not leave the remote in an extremely hot or humid place.
- Do not use a new battery with an old one.
- Do not expose the remote sensor to direct sunlight or lighting apparatuses. Doing so may cause a malfunction.
- If you don't use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

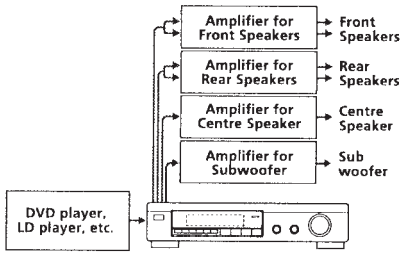
Hooking Up the System

The surround processor allows you to connect up to 5 digital audio (video) source components, such as a DVD player or LD player with an AC-3 RF output. The illustration at right describes how to make connections between your digital audio (video) source components the surround processor, and your multichannel amplifier.

- **Connecting an amplifier with 5.1 ch inputs**



- **Connecting separate amplifiers for each speaker**

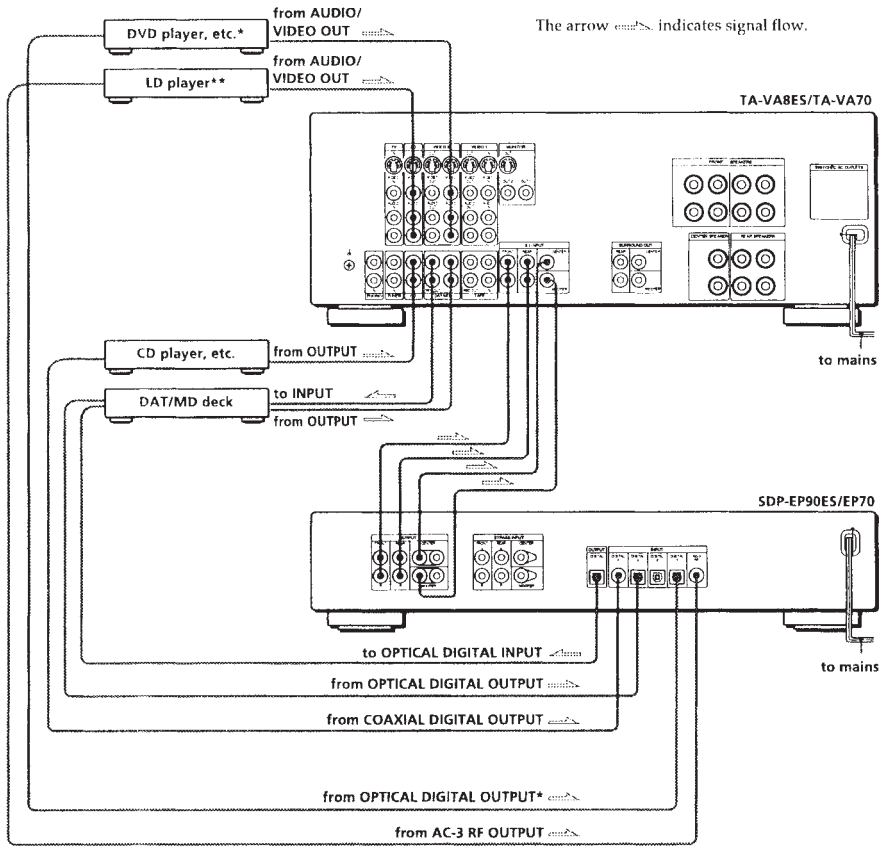


1 Connect the OUTPUT terminals of the surround processor to the front (left and right), rear (left and right) centre and sub woofer channel inputs on your amplifier (for TA-VA8ES/TA-VA70, connect the to the 5.1 INPUT terminals as shown on the following page).

2 Connect the digital audio outputs of each component to the appropriate terminals on the back of the surround processor.
This unit's digital inputs detect MPEG, Dolby Digital (AC-3) or PCM signals automatically. The AC-3 RF input terminal for use with LD players is for Dolby Digital (AC-3) signals only.

Connecting an amplifier with 5.1 ch inputs (such as the Sony TA-VA8ES/TA-VA70, etc.)

The arrow ⟹ indicates signal flow.



Notes on connection

- Do not connect the mains lead to a mains or press the POWER switch before completing all connections.
- The cable connectors should be fully inserted into the jacks. Loose connection may cause hum and noise.
- Jacks and plugs of the connecting cords are color-coded as follows:
  Yellow jacks and plugs: Video signal
  Red jacks and plugs: Right audio channel
  White jacks and plugs: Left audio channel
  You can use either red or white cables to connect the centre speaker and sub woofer.

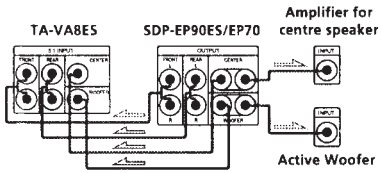
* If your DVD player has a COAXIAL DIGITAL OUTPUT, we recommend connecting the DVD player's COAXIAL DIGITAL INPUT to the this unit's DIGITAL INPUT 4 (COAXIAL IN) instead of making the optical connection shown above.

** If your LD player has an optical digital output, connect it to one of the DIGITAL INPUT 1~3 jacks on this unit. This connection can be used together with the AC-3 RF connection.

(continued)

If you have an additional surround amplifier with pre out terminals (such as the Sony TA-E2000ESD)
You can connect it to this unit's BYPASS INPUT jacks. The signals from the connected amplifier will be output without alteration from this unit's OUTPUT jacks when you select BYPASS (see page 11 for details).

If you have an additional centre speaker or active sub woofer
Connect the other CENTER OUTPUT terminal to the input on the amplifier for your other centre speaker. Connect the other WOOFER OUTPUT terminal to the input terminal on the active woofer.

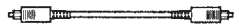


Connecting digital components

You can connect the digital output jacks of a DVD player, DAT/MD deck, CD player (etc.) to the surround processor's digital input jacks (DIGITAL INPUT 1~4).
You can also connect the AC-3 RF output terminal of an LD player to the surround processor's AC-3 RF INPUT terminal.
You can connect the surround processor's digital output jack (DIGITAL OUTPUT) to a DAT/MD deck.

What cords will I need?

- Optical digital connecting cord (not supplied)

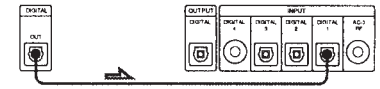


- Coaxial digital connecting cord (not supplied)

Hookups

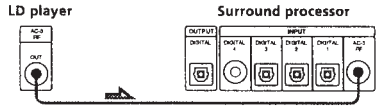
The arrow ⟹ indicates signal flow.

DVD player
Be sure to connect the DVD player's digital output to one of the surround processor's DIGITAL INPUT 1~4 jacks.



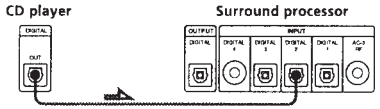
If your DVD player has a COAXIAL DIGITAL OUTPUT, we recommend connecting the DVD player's COAXIAL DIGITAL INPUT to the this unit's DIGITAL INPUT 4 (COAXIAL IN) instead of making the optical connection shown above.

LD player
Be sure to connect the LD player's AC-3 RF output to the surround processor's AC-3 RF INPUT jacks.

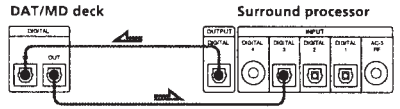


If your LD player has an optical digital output, connect it to one of the DIGITAL INPUT 1~3 jacks on this unit.
This connection can be used together with the AC-3 RF connection.

CD player



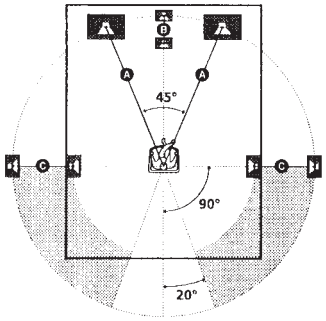
DAT/MD deck



Note
This unit is only compatible with digital components using 32 kHz/44.1 kHz/48 kHz sampling frequencies. It is not compatible with 96 kHz.

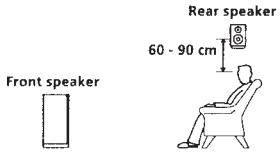
Speaker Placement

For the best possible surround sound all speakers should be the same distance from the listening position (A).
(However, this unit lets you to place the centre speaker up to 1.5 metres closer (B) and the rear speakers up to 4.5 metres closer (C) to the listening position.
The front speakers can be placed from 1.0 to 12.0 metres from the listening position (A).)

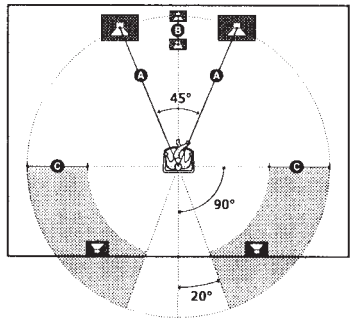


Notes

- Do not place the centre or rear speakers farther away from the listening position than the front speakers.
- When mounting the rear speakers on side walls perpendicular to the listening position they should be placed 60 - 90 cm above the listening position.



Depending on the shape of your room (etc.), you may wish to place the rear speakers behind you instead of on the side walls. One advantage of this placement is that you can use a pair of large floor standing speakers matching your front speakers.



Note

If you place the rear speakers behind you, be sure to check the speaker location setting in the SP. SETUP menu when using VIRTUAL MULTI REAR and VIRTUAL REAR SHIFT sound fields (see pages 8 and 13 for details).

Before You Use Your Processor

Before you start using your processor, make sure that you have:

- Turned MASTER VOLUME to –20 dB (near the centre position).

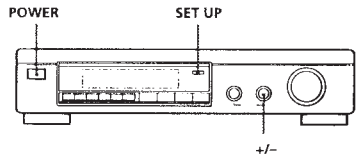
Turn on the processor and check the following indicator.

- Press MUTING on the remote if "MUTING ON" appears in the display.
- Press BYPASS or one of the INPUT buttons if "BYPASS ON" appears in the display.
- Press SET UP to register the type of speakers you have connected and their distance from your listening position (see "Speaker Set Up" on the following page).

Speaker Set Up

To obtain the best possible surround sound, first specify the type of speakers you have connected and their distance from your listening position. Then use the test tone to adjust the speaker volumes to the same level.

Specifying the speaker type and distance



1 Press POWER on the front panel to turn on the processor.

2 Press SET UP.
"SP.SETUP" appears in the display

3 Press SET UP repeatedly to select the parameter you want to adjust.

4 Turn the +/– knob to select the setting you desire.
The settings is entered automatically.

5 Repeat steps 3 and 4 until you have set all of the parameters shown below.

6 Press SET UP to exit the set up mode.

Front speaker size

Initial setting is : FRONT SP [LARGE]

- If you connect large speakers that will effectively reproduce bass frequencies, select "LARGE".
- If you connect small speakers with minimal bass response, select "SMALL" to activate the Dolby Digital (AC-3) bass redirection circuitry and output the front channel bass frequencies from the sub woofer or other "LARGE" speakers.

Centre speaker size

Initial setting is : CENTER SP [LARGE]

- If you connect large speakers that will effectively reproduce bass frequencies, select "LARGE" (WIDE mode).
- If you connect small speakers with minimal bass response, select "SMALL" to activate the Dolby Digital (AC-3) bass redirection circuitry and output the centre channel bass frequencies from the front speakers, sub woofer or other "LARGE" speakers (NORMAL mode).
- If you do not connect the centre speaker, select "NO" (PHANTOM mode).

Rear speaker size

Initial setting is : REAR SP [LARGE]

- If you connect large speakers that will effectively reproduce bass frequencies, select "LARGE".
- If you connect small speakers with minimal bass response, select "SMALL" to activate the Dolby Digital (AC-3) bass redirection circuitry and output the rear channel bass frequencies from the sub woofer or other "LARGE" speakers.
- If you do not connect rear speakers, select "NO" (3 CH mode).

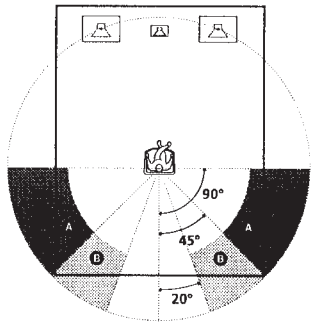
Rear speaker position

Initial setting is : REAR SP [SIDE]

This parameter lets you specify the location of your rear speakers for proper implementation of the Digital Cinema Sound VIRTUAL REAR SHIFT and VIRTUAL MULTI REAR modes. Refer to the illustration below.

- Set to SIDE if the location of your rear speakers corresponds to section A.
- Set to BEHIND if the location of your rear speakers corresponds to section B.

This setting effects only the VIRTUAL REAR SHIFT and VIRTUAL MULTI REAR modes.



Sub woofer selection

Initial setting is : SUB WOOFER [YES]

- If you connect a sub woofer, select "YES" to output the LFE (low frequency effect) channel from the sub woofer.
- If you do not connect a sub woofer, select "NO". This activates the MPEG/Dolby Digital (AC-3) bass redirection circuitry and outputs the LFE signals from other speakers.
- In order to take full advantage of the Dolby Digital (AC-3) bass redirection circuitry, we recommend setting the sub woofer's cut off frequency as high as possible. (However, when using an amplifier with 5.1 ch inputs, set the sub woofer's cut off frequency to match the characteristics of the amplifier.

Front speaker distance

Initial setting is : FRONT 5.0 meter

Set the distance from your listening position to the front (left or right) speaker (Ⓐ on page 7).

- Front speaker distance can be set in 0.1 metre steps from 1.0 to 12.0 metres.
- If both speakers are not placed an equal distance from your listening position, set the distance to the closest speaker.

Centre speaker distance

Initial setting is : CENTER 5.0 meter

Set the distance from your listening position to the centre speaker.

- Centre speaker distance can be set in 0.1 metre steps from a distance equal to the front speaker distance (Ⓐ on page 7) to a distance 1.5 metres closer to your listening position (Ⓑ on page 7).
- Do not place the centre speaker farther away from your listening position than the front speakers.

Rear speaker distance

Initial setting is : REAR 3.5 meter

Set the distance from your listening position to the rear (left or right) speaker.

- Rear speaker distance can be set in 0.1 metre steps from a distance equal to the front speaker distance (Ⓐ on page 7) to a distance 4.5 metres closer to your listening position (Ⓒ on page 7).
- Do not place the rear speakers farther away from your listening position than the front speakers.
- If both speakers are not placed an equal distance from your listening position, set the distance to the closest speaker.

To manually adjust the bass roll off frequency for each channel

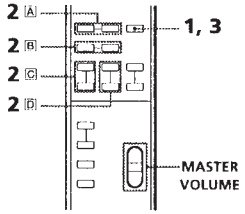
When the front, centre, or rear speaker sizes are set to small, the bass roll off frequency is automatically set to 120 Hz. To select a different roll off frequency, set the menu mode to EXPAND and use the front, centre, or rear speaker roll off parameters in the speaker set up menu.

For details about the menu mode, see page 15.

For details about the roll off parameters, see page 19.

Adjusting the speaker volume

Use the remote while seated in your listening position to adjust the volume of each speaker.



Note

This unit incorporates a new test tone with a frequency centred at 800 Hz for easier speaker volume adjustment.

1 Press TEST.
You will hear the test tone from each speaker in sequence.

2 From your listening position, use the remote to adjust the volume of each speaker so that the test tone can be heard at the same level from all speakers.

- Ⓐ Press FRONT BAL L or R to adjust the balance between the front left and right speakers (±8 dB, 0.5 dB/steps).
  During this adjustment, the test tone is emitted from both speakers simultaneously.
- Ⓑ Press REAR BAL L or R to adjust the balance between the rear left and right speakers (±8 dB, 0.5 dB/steps).
  During this adjustment, the test tone is emitted from both speakers simultaneously.
- Ⓒ Press CENTER + or – to adjust the level of centre speaker (0.5 dB/steps).
  During this adjustment, the test tone is emitted from the centre speaker.
- Ⓓ Press REAR + or – to adjust the level of rear speakers (0.5 dB/steps).
  During this adjustment, the test tone is emitted from both speakers simultaneously.

3 Press TEST to turn off the test tone.

(continued)

To adjust the volume of all the speakers at one time

Use MASTER VOLUME on the processor, remote, or your multichannel processor.

When using an amplifier with 5.1 ch inputs, set this unit's MASTER VOLUME to –20 dB (near the centre position) and adjust the amplifier's volume control.

To set the test tone to a specific channel

Set the menu mode to EXPAND and use the test tone parameter in the LEVEL ADJUST menu to select the channel you desire.

For details about the menu mode, see page 15.

For details about the test tone parameter, see page 15.

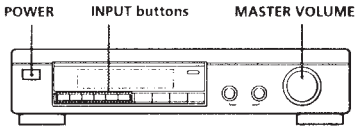
Notes

- The front balance, rear balance, centre level, and rear level are shown in the display during adjustment.
- Although these adjustments can also be made with the LEVEL ADJUST menu using the knobs on the front panel, we recommend you follow the procedure described above and adjust the speaker levels from your listening position using the remote control.

Selecting a Component

To listen to or watch a connected component, first select the function on the processor or with the remote.
Before you begin, make sure you have:

- Connected all components securely and correctly as indicated on pages 4 to 7.
- Turned MASTER VOLUME to –20 dB (near the centre position) (when using an amplifier with 5.1 ch inputs).
- Turned MASTER VOLUME to –∞ dB (when using separate amplifiers for each speaker).



1 Press POWER to turn on the processor.

2 Press an INPUT button to select the component you want to use:

To listen to or watch	Press
An LD player connected to the AC-3 RF INPUT jack	AC-3 RF
The component connected to the DIGITAL 1, 2, or 3 optical input jack.*	DIGITAL 1, 2, or 3
The component connected to the DIGITAL 4 coaxial input jack.	DIGITAL 4
The component connected to the BYPASS input jacks.	BYPASS**

* This unit's digital inputs detect MPEG, Dolby Digital (AC-3), or PCM signals automatically. (The AC-3 RF input terminal for use with LD players is for Dolby Digital (AC-3) signals only.)

** • The menu functions may not be available when the unit is set to the "BYPASS ON" mode.
• If you connected an additional audio amplifier (etc.) to the BYPASS IN jacks on the processor as described on page 6, use the function selector on that component to select the component you want to listen to ("CD" for example).
• This unit switches to the "BYPASS ON" mode while its POWER is set to off.

3 When connected to an amplifier with 5.1 ch inputs, turn on your amplifier, select the respective component, then select the 5.1 channel input.
EXAMPLE: Turn FUNCTION to select "LD", then press 5.1 INPUT (for Sony TA-VA8ES). At this time, set the MASTER VOLUME control on your amplifier to "0".

4 Turn on the source component, the LD player for example, and start playback.

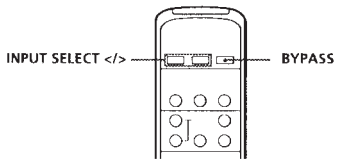
5 Use the MASTER VOLUME on your amplifier to adjust the volume.

To	Do this
Mute the sound	Press MUTING on the remote. Press again to restore the sound
Reinforce the bass	Press BASS BOOST to turn on the B.BOOST indicator.
Turn off the display	Press DISPLAY on the remote.
Adjust the level of the sub woofer*	Press the SUB WOOFER + / – on the remote.

* In order to take full advantage of the MPEG/Dolby Digital (AC-3) bass redirection circuitry, we recommend setting the sub woofer's cut off frequency as high as possible. (However, when using an amplifier with 5.1 ch inputs, set the sub woofer's cut off frequency to match the characteristics of the amplifier.)

Using the remote

The remote lets you operate the processor.
EXAMPLE: To listen to a Dolby Digital (AC-3) encoded Laserdisc played back in

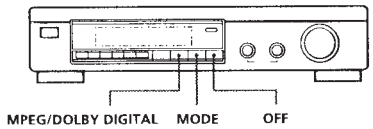


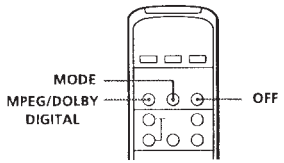
1 Press POWER on the front panel to turn on the processor.

2 Press INPUT SELECT < or > repeatedly to display the input for the component you want to use (or press BYPASS to display "BYPASS ON").
EXAMPLE: If you connected your LD player to the AC-3 RF INPUT, select "AC-3 RF".

Selecting a Surround Field

You can select a surround field according to the type of source you are playing.
When playing programme sources recorded in the MPEG or Dolby Digital (AC-3) format, you can enjoy surround sound simply by selecting "MPEG/DOLBY DIGITAL".
This unit also incorporates several pre-programmed sound modes called "Digital Cinema Sound". Select from these surround modes according to your preference to enjoy powerful surround effects from a wide variety of programme sources.





To select the MPEG or Dolby Digital surround modes

Press MPEG/DOLBY DIGITAL.
Normally, select this mode when playing programme sources recorded in the MPEG or Dolby Digital (AC-3) format.

To select Digital Cinema Sound

Press MODE repeatedly until the mode you desire appears in the display.
See the chart on the following page for details regarding the types of surround modes available and the effects they provide.

When you select DOLBY SURROUND
When the signal being input is PCM, normal 2 channel playback occurs.
When the signal being input is Dolby Digital (AC-3), the number of channels played back are determined automatically according to the characteristics of the input signal.
In the "DOLBY SURROUND" mode the number of channels being played back from the current programme source appear in the display as shown below:

Display	Channels played back
STEREO PCM [xx kHz]*	Normal PCM playback
MPEG AUDIO [1/0]**	Centre only (mono)
DOLBY DIGITAL [1/0]**	
MPEG AUDIO [2/0]	Front (L, R)
DOLBY DIGITAL [2/0]	
MPEG AUDIO [2/1]	Front (L, R) + Rear (mono)
DOLBY DIGITAL [2/1]	
MPEG AUDIO [2/2]	Front (L, R) + Rear (L, R)
DOLBY DIGITAL [2/2]	
MPEG AUDIO [3/0]**	Front (L, R) + Centre
DOLBY DIGITAL [3/0]**	
MPEG AUDIO [3/1]	Front (L, R) + Centre +
DOLBY DIGITAL [3/1]	Rear (mono)
MPEG AUDIO [3/2]	Front (L, R) + Centre +
DOLBY DIGITAL [3/2]	Rear (L, R)
DOLBY PROLOGIC	Front (L, R) + Centre + Rear (mono)

* 48 kHz, 44.1 kHz, or 32 kHz is displayed. 44.1 kHz is displayed as "44 kHz".
** The surround effect may not be readily apparent in all cases.

When playing a 2 channel MPEG or Dolby Digital (AC-3) source, the unit determines either Pro Logic of stereo playback automatically according to the information provided by the programme source.

You can find Dolby Surround-encoded software by looking at the packaging
Use discs with the logo. In order to enjoy Dolby Digital (AC-3) playback you must use discs bearing this logo.

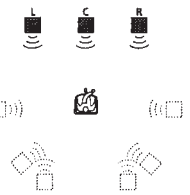
Digital Cinema Sound

Surround mode	Effect
NORMAL SURROUND	Decodes programmes processed with MPEG or Dolby Surround. Use to decode 2 ch sources using Dolby Pro Logic decoding.
ENHANCED SURROUND	Provides a greater sense of presence from Pro Logic sources with monaural rear channel sound. Produces a stereo like effect in the rear channels.
LARGE THEATER	Reproduces the acoustics of a standard movie theatre.
CINEMA STUDIO A	Reproduces the sound characteristics of the Sony Pictures Entertainment "Cary Grant Theatre" cinema production studio.
CINEMA STUDIO B	Reproduces the sound characteristics of the Sony Pictures Entertainment "Kim Novak Theatre" cinema production studio.
CINEMA STUDIO C	Reproduces the sound characteristics of the Sony Pictures Entertainment scoring stage.
VIRTUAL ENHANCED (SURROUND) A (Ill.[1])	Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers without using actual rear speakers. The virtual speakers are reproduced as shown in Ill. [1].
VIRTUAL ENHANCED (SURROUND) B (Ill.[2])	Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers without using actual rear speakers. The virtual speakers are reproduced as shown in Ill. [2].
VIRTUAL REAR SHIFT (Ill.[3])	Uses 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position. The shift position differs according to the setting of the rear speaker position (SP. SETUP).
VIRTUAL MULTI REAR (Ill.[4])	Uses 3D sound imaging to create an array of virtual rear speakers from a single pair of actual rear speakers. The position of the virtual rear speakers differs according to the setting of the rear speaker position (SP. SETUP).
LARGE HALL	Reproduces the acoustics of a live house. Use when playing recordings of live concerts (etc.).
LIVE HOUSE	Creates a simulated surround sound from monaural sources such as old movies or TV programmes.

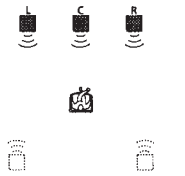
To turn off the surround effect (2 channel stereo playback)

Press OFF (or DIGITAL CINEMA SOUND - OFF on the remote). At this time MPEG or Dolby Digital (AC-3) signals are automatically downmixed to front (L, R) signals.

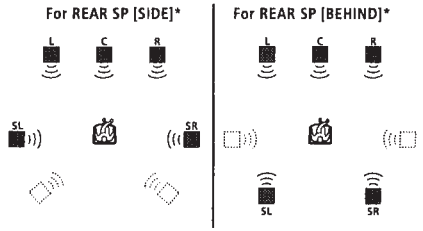
Ill.[1] VIRTUAL ENHANCED (SURROUND) A



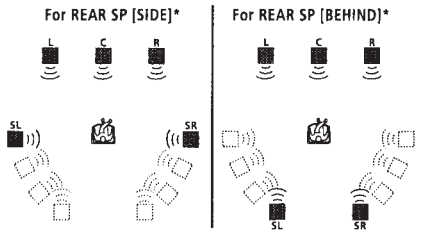
Ill.[2] VIRTUAL ENHANCED (SURROUND) B



Ill.[3] VIRTUAL REAR SHIFT



Ill.[4] VIRTUAL MULTI REAR



L : Front speaker (left)
R : Front speaker (right)
C : Centre speaker
SL : Rear speaker (left)
SR : Rear speaker (right)
⬚ : Virtual speaker

* See page 8 for details on how to set the rear speaker position.

(continued)

Adjusting the Surround Effect Level (for Digital Cinema Sound modes only*)

You can adjust the surround effect level. This control lets you adjust the "presence" of the current Digital Cinema Sound mode from 0% (no digital cinema sound effects) to 100% (150%) in 5% steps.

* This adjustment is not possible in the NORMAL SURROUND or ENHANCED SURROUND mode.

1 Start playing a programme source.

2 Press DIGITAL CINEMA SOUND - MODE on the remote repeatedly to select the mode you desire.

3 Press EFFECT + or – on the remote to select the level you prefer. The effect level is indicated in the display during adjustment. The level is stored automatically.

Note

Changing the effect level may not produce major variations in the surround effect when used with certain playback sources.

You can also adjust the surround effect level using the controls on the front panel.

Use the MENU and the +/– knobs to adjust the surround effect level parameter in the SURROUND menu.

See page 15 for details on menu operations and the surround effect level parameter.

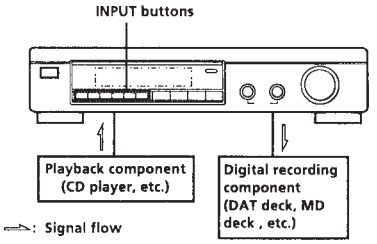
Compressing the dynamic range (MPEG or Dolby Digital (AC-3) only)

When inputting a MPEG or Dolby Digital (AC-3) signal you can compress the dynamic range of the sound track by using the dynamic range compression parameters in the SURROUND menu. This may be useful when you want to watch movies at low volumes late at night. See page 15 for details on menu operations and page 16 for details on the dynamic range compression parameter.

Digital Recording

This processor makes it easy to make digital recordings from the components connected to the processor. You don't have to connect playback and recording components directly.

Before you begin, make sure you've connected all components properly.



EXAMPLE: Recording a CD using a DAT deck

See your DAT or CD player's instruction manual if you need help.

1 Press DIGITAL 1 (if a CD player is connected to the DIGITAL 1 INPUT) to select the CD player.

2 Insert a blank digital audio tape into the DAT for recording.

3 Start recording on the DAT and then start playing the CD you want to record.

Note

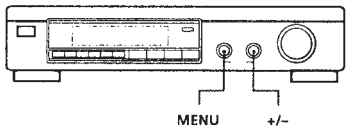
You cannot record the digital signal from a MPEG or Dolby Digital (AC-3) programme source.

Settings and Adjustments

The menu operations allow you to customize various aspects of the processor to suit your listening environment, your speakers, your components, and your personal preferences.
You can select between two menu modes (basic and expand) according to your needs.

- The basic menu mode (BASIC) lets you make general adjustments to the sound fields and adjust all speaker settings simultaneously.
- The expanded menu mode (EXPAND) lets you make precise individual adjustments to the equalization and low cut frequency of the front, centre, and rear speakers, and determine the default settings for the digital inputs.

Note
If you switch from EXPAND mode to BASIC mode, the adjustments made in the EXPAND mode are retained. However, if you adjust parameters from the same menu in the BASIC mode, those settings change accordingly. For example, when you switch to the basic mode, the individual tone controls for each speaker (in the EQUALIZER menu) are preserved. However, a single adjustment to the general tone controls (in the SURROUND menu) sets all speaker equalizations to the front speaker settings.



1 Push the MENU knob repeatedly to display one of the following menus:

BASIC mode	EXPAND mode
LEVEL ADJUST menu	LEVEL ADJUST menu
SURROUND menu	SURROUND menu
SP. SETUP menu	EQUALIZER menu
CUSTOMIZE menu	SP. SETUP menu
	CUSTOMIZE menu

2 Turn the MENU knob to select the parameter you desire from the respective menu.

3 Turn the + / – knob to select the setting you desire. The setting is entered automatically.

4 Repeat steps 1 through 3 to make all necessary adjustments.

When using the controls on the remote
1 Press SELECT repeatedly to display the desired menu.
2 Press MENU ∧ / ∨ repeatedly to select the parameter you desire from the respective menu
3 Press + / – repeatedly to select the setting you desire. The setting is entered automatically.
4 Repeat steps 1 through 3 to make all necessary adjustments.

Note
Certain menu items may not be available for adjustment depending on the current settings and menu modes. Unavailable items appear dimmed when shown in the display.

LEVEL ADJUST menu

The LEVEL ADJUST menu contains speaker level adjustment parameters that allow you to balance output level to each speaker.

Most of these settings can also be adjusted directly using remote. See "Adjusting the speaker volume" (page 9).

Test tone
Initial setting is : TEST TONE OFF
Lets you turn the test tone on and off.
- When the menu mode is set to BASIC, you can select between "OFF" and "[ ] auto". "[ ] auto" provides the same test tone activity as the described on page 8.
- When the menu mode is set to EXPAND, you can select which speaker will emit the test tone; [L]: left (front), [C]: centre, [R]: right (front), [SR]: rear right, [SL]: rear left.

Front speaker balance
Initial setting is : FRONT L ___I___ R
Lets you adjust the balance between the front left and right speakers.
- The balance can be adjusted ±8.0 dB in 0.5 dB steps.

Rear speaker balance
Initial setting is : REAR L ___I___ R
Lets you adjust the balance between the rear left and right speakers.
- The balance can be adjusted ±8.0 dB in 0.5 dB steps.

Rear speaker level
Initial setting is : REAR LEVEL 0 dB
Lets you adjust level of the rear (left and right) speakers.
- The level can be adjusted in 0.5 dB steps from –20.0 dB to +10.0 dB.
- Selecting MUTE completely mutes the sound (–∞) from the rear speakers. In this case, the sound of the rear channels is not output from the front speakers, etc.

(continued)

Centre speaker level
Initial setting is : CENT. LEVEL 0 dB
Lets you adjust the level of the centre speaker.
- The level can be adjusted in 0.5 dB steps from –20.0 dB to +10.0 dB.
- Selecting MUTE completely mutes the sound (–∞) from the centre speaker. In this case, the sound of the centre channel is not output from the front speakers, etc.

Sub woofer level
Initial setting is : SUB WOOFER 0 dB
Lets you adjust the level of the sub woofer.
- The level can be adjusted in 0.5 dB steps from –20.0 dB to +10.0 dB.
- Selecting MUTE mutes the sound from the sub woofer.

SURROUND menu

The SURROUND menu contains parameters that let you customize various aspects of the current surround field. The settings available in this menu are stored separately for each surround field. The parameter types vary according to the menu mode.

Surround effect level (Digital Cinema Sound modes only)
Initial setting is : SURR. EFFECT 100%
This parameter can be adjusted directly using EFFECT + / – on the remote. It lets you adjust the "presence" of the current digital cinema sound surround effect.
- The effect level can be adjusted from 0% (no digital cinema sound effects) to 100% (150%) in 5% steps.

Low Frequency Effect (LFE) mix level (DISCRETE only)
Initial setting is : LFE MIX. 0dB
This parameter lets you attenuate the level of the LFE (Low Frequency Effect) channel output from the sub woofer without effecting the level of the bass frequencies sent to the sub woofer from the front, centre or rear channels via the bass redirection circuitry.
- The level can be adjusted in 0.5 dB steps from –20.0 dB to 0 dB (line level). 0 dB outputs the full LFE signal at the mix level determined by the recording engineer.
- Selecting MUTE mutes the sound of the LFE channel from the sub woofer. However, the low frequency sounds of the front, centre, or rear speakers are output from the sub woofer according to the settings made for each speaker in the speaker setup (page 8).

Dynamic range compression ratio
Initial setting is : D. RANGE COMP OFF
Lets you compress the dynamic range of the sound track. This may be useful when you want to watch movies at low volumes late at night.
- OFF reproduces the sound track with no compression.
- STD reproduces the sound track with the full dynamic range as intended by the recording engineer.
- 0.1 – 0.9 allow you to compress the dynamic range in small steps to achieve the sound you desire.
- MAX provides a dramatic compression of the dynamic range.
- During playback of MPEG sources, the compression radio is fixed (STD, 0.1 – 0.9, and MAX all produce the same effect).

Tone Control (on/off) •Basic mode only•
Initial setting is : TONE CONTROL OFF
Lets you turn the BASS and TREBLE tone control adjustments ON or OFF. You can use this setting to compare the sound of the BASS and TREBLE adjustments with that of the original signal.
- OFF flattens the frequency characteristics of all channels simultaneously. If you adjust the bass or treble levels after setting the tone control to OFF, the sound quality changes from the flat (0 dB) position.
- ON restores the frequency characteristics to the values present before the tone control was set to OFF.

Bass level adjustment •Basic mode only•
Initial setting is : BASS 0 dB
Lets you adjust the level of the bass frequencies of the front (left and right), centre, and rear (left and right) channels simultaneously. To adjust the LFE channel, see "Low Frequency Extension (LFE) mix level".
- The level can be adjusted ±10 dB in 1 dB steps.
- The "0dB" setting represents line level (0 dB).

Treble level adjustment •Basic mode only•
Initial setting is : TREBLE 0 dB
Lets you adjust the level of the treble frequencies of the front (left and right), centre, and rear (left and right) channels simultaneously.
- The level can be adjusted ±10 dB in 1 dB steps.
- The "0dB" setting represents line level (0 dB).

EQUALIZER menu •Expand mode only•

In EXPAND mode, the settings in this menu replace the tone control settings of the SURROUND menu. This menu contains parameters that allow you to adjustment to the tone of the front (left and right), centre, and rear (left and right) speakers individually.

Equalizer (on/off)
Initial setting is : EQUALIZER ON
Lets you turn the equalizer adjustments ON or OFF. You can use this setting to compare the sound of the equalizer adjustments with that of the original signal.
- OFF flattens the frequency characteristics of all channels simultaneously. If you adjust the bass or treble levels after setting the equalizer to OFF, the sound quality changes from the flat (0 dB) position.
- ON restores the frequency characteristics to the values present before the equalizer was set to OFF.

Front speaker bass adjustment
Level : FRONT BASS 0dB
Frequency : FRONT BASS 250Hz
Use the +/– knob to adjust the level, then turn the MENU knob to move select the frequency (Hz) and use the +/– knob to adjust the frequency. Repeat until you achieve the sound you desire.
- The level can be adjusted ±10 dB in 0.5 dB steps.

Front speaker treble adjustment
Level : FRONT TREBLE 0dB
Frequency : FRONT TREBLE 2.5kHz
Adjust as described in "Front speaker bass adjustment".
- The level can be adjusted ±10 dB in 0.5 dB steps.

Centre speaker bass adjustment
Level : CENTER BASS 0dB
Frequency : CENTER BASS 250Hz
Adjust as described in "Front speaker bass adjustment".
- The level can be adjusted ±10 dB in 0.5 dB steps.

Centre speaker treble adjustment
Level : CENTER TREBLE 0dB
Frequency : CENTER TREBLE 2.5kHz
Adjust as described in "Front speaker bass adjustment".
- The level can be adjusted ±10 dB in 0.5 dB steps.

Rear speaker bass adjustment
Level : REAR BASS 0dB
Frequency : REAR BASS 250Hz
Adjust as described in "Front speaker bass adjustment".
- The level can be adjusted ±10 dB in 0.5 dB steps.

Rear speaker treble adjustment
Level : REAR TREBLE 0dB
Frequency : REAR TREBLE 2.5kHz
Adjust as described in "Front speaker bass adjustment".
- The level can be adjusted ±10 dB in 0.5 dB steps.

CUSTOMIZE menu

The CUSTOMIZE menu allows you to customize various aspects of the this unit's operation. The parameters available in this menu vary depending on the menu mode (BASIC/EXPAND).

Muting
Initial setting is : MUTING OFF
Lets you mute the sound (same as MUTING button on the remote).
- ON mutes the sound from all speakers.
- OFF restores the sound to the original volume.

Display dimmer control
Initial setting is : DISP. DIMMER 100%
Lets you adjust the brightness of the display window.
It can be adjusted in 1% steps from 25 to 100%.

Distance unit •Expand mode only•
Initial setting is : DIST.UNIT [meter]
Lets you select either metres or feet as the unit of measure for setting distances. 1 foot corresponds to a 1 ms difference.

Equalizer memory •Expand mode only•
Initial setting is : EQ MEMORY [ON]
- ON allows you to set the equalizer independently for each surround mode.
- OFF allows you to use fix the equalizer to one setting for all surround modes.

Memory clear
Initial setting is : MEMORY CLEAR [NO]
To clear the memory, select [YES] and wait a few seconds. "Are you sure?" is displayed. If you select [YES] again and wait a few seconds, the unit clears all of the parameters and resets them to the factory presets "MEMORY CLEARED!" is displayed as confirmation.

(continued)

Processor Operations

Menu mode selection
Initial setting is : MENU MODE [BASIC]
Lets you choose between the basic or the expand menu mode:
- The basic menu mode (BASIC) lets you make general adjustments to the sound fields and adjust the tone of all the speakers simultaneously.
- The expanded menu mode (EXPAND) lets you make precise individual adjustments to the equalization and low cut frequency of the front, centre, and rear speakers, and determine the default settings for the digital inputs.

Note
If you switch from EXPAND mode to BASIC mode, the adjustments made in the EXPAND mode are retained. However, if you adjust parameters from the same menu in the BASIC mode, those settings change accordingly. For example, when you switch to the basic mode, the individual tone controls for each speaker (in the EQUALIZER menu) are preserved. However, a single adjustment to the general tone controls (in the SURROUND menu) sets all speaker equalizations to the front speaker settings.

Even if you plan on making individual adjustments using the EQUALIZER menu,
We recommend that you start by using the tone controls in the basic menu mode and then make further refinements by switching to the expand mode and using the equalizer.

Digital input trim adjustment •Expand mode only•
Initial setting is : INPUT TRIM 0dB
Different components often have a different line levels. In such cases you can adjust the line level at each of the digital inputs. Settings are stored independently for each input.

Digital input mode •Expand mode only•
Initial setting is : DECODE MODE [AUTO]
Lets you specify the type of signal to be input to the currently digital input jack (AC-3 RF or DIGITAL 1~4). Settings are stored independently for each input.
- AUTO : This unit automatically switches between MPEG, Dolby Digital (AC-3), and PCM.
- AC-3 : All input signals are treated as Dolby Digital (AC-3) signals. If a MPEG or PCM signal is input to a jack set to AC-3, no sound will be heard.
- MPEG : All input signals are treated as MPEG signals. If a Dolby Digital (AC-3) or PCM signal is input to a jack set to MPEG, no sound will be heard.

SP. SETUP menu

The speaker setup menu contains parameters that allow you to set the type and size of the speakers in your system. This information is essential for production of realistic surround sound. The settings available in this menu can also be accessed by pressing SET UP (see "Speaker Set Up" on page 8 for details).

Front speaker size
Initial setting is : FRONT SP [LARGE]
See page 8.

Centre speaker size
Initial setting is : CENTER SP [LARGE]
See page 8.

Rear speaker size
Initial setting is : REAR SP [LARGE]
See page 8.

Rear speaker position
Initial setting is : REAR SP [SIDE]
See page 8.

Sub woofer selection
Initial setting is : SUB WOOFER [YES]
See page 8.

Front speaker distance
Initial setting is : FRONT 5.0 meter
See page 8.

Centre speaker distance
Initial setting is : CENTER 5.0 meter
See page 8.

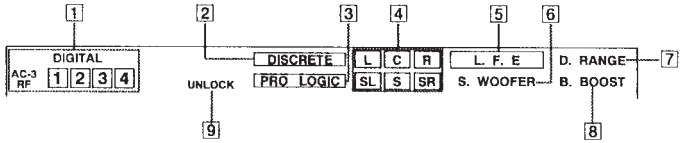
Rear speaker distance
Initial setting is : REAR 3.5 meter
See page 8.

Front speaker roll off frequency •Expand mode only•
Initial setting is : FRONT SP > 120 Hz
This setting lets you select the roll off frequency for the low cut filter of the front (left and right) speakers.
- The bass frequencies lower than the cut off frequency are divided by the MPEG/Dolby Digital (AC-3) bass redirection circuitry and output from the sub woofer or other "LARGE" speakers. In order to prevent clipping, frequencies below the cut off frequency are not output from the front speakers.

Centre speaker roll off frequency •Expand mode only•
Initial setting is : CENTER SP > 120 Hz
This setting lets you select the roll off frequency for the low cut filter of the centre speaker.
- The bass frequencies lower than the cut off frequency are divided by the MPEG/Dolby Digital (AC-3) bass redirection circuitry and output from the sub woofer or other "LARGE" speakers. In order to prevent clipping, frequencies below the cut off frequency are not output from the centre speaker.

Rear speaker roll off frequency •Expand mode only•
Initial setting is : REAR SP > 120 Hz
This setting lets you select the roll off frequency for the low cut filter of the rear (left and right) speakers.
- The bass frequencies lower than the cut off frequency are divided by the MPEG/Dolby Digital (AC-3) bass redirection circuitry and output from the sub woofer or other "LARGE" speakers. In order to prevent clipping, frequencies below the cut off frequency are not output from the rear speakers.

Understanding the Display



[1] Input selector indicators
The input terminal selected by the INPUT selectors on the front panel lights up.

[2] DISCRETE
Lights up when this unit decodes signals recorded in the MPEG or Dolby Digital (AC-3) format and outputs the intended number of signals contained in those signals. Does not light when the input signal is 2-channel stereo or when the input signal is mixed down because the surround function is off.

[3] PRO LOGIC
Lights when this unit applies Pro Logic processing to two channel signals in order to output the centre and surround channel signals.

[4] Output channel indicators
Light to indicate which channels are being output.
L: Front Left R: Front Right
C: Centre (monaural) SL: Rear Surround Left
SR: Rear Surround Right
S: Rear Surround (monaural or the rear components obtained by Pro Logic processing)

See the following page for details regarding the channel indication.

When MPEG/DOLBY DIGITAL is pressed, the number of channels in the signal being input are shown on the display (Example: DOLBY DIGITAL [3/2]). See the following page for details.

[5] L.F.E
The letters "L.F.E" light up when the disc being played contains the LFE (Low Frequency Effect) channel. When the sound of the LFE channel signal is actually being reproduced, the frame around the letters also lights up. Since the LFE signal is not recorded in all part of the input signal, the frame may turn on and off repeatedly during playback.

[6] S.WOOFER
Lights when sub woofer selection is set to "YES", "UNLOCK" is not lit, and this unit detects that the disc being played does not contain the LFE channel signal. While this indicator is lit, this unit creates a sub woofer signal based on the low frequency components of the front channels.

[7] D.RANGE
Lights when the [D.RANGE COMP] parameter in the menu is not set to OFF and a signal recorded in the MPEG or Dolby Digital (AC-3) format is input to this unit. See page 16 for details regarding this setting.

[8] B.BOOST
Lights when the BASS BOOST button on the front panel is pressed to enhance the low frequencies.

[9] UNLOCK
Lights when this unit is not capable of reproducing a digital signal. For example, this indicator may light up if the connected component does not output signal, the disc being played does not contain the signal, or no playback components are connected (etc.).

Output channel diplay

This unit shows which channels signals are being output from. The display varies depending on the number of speakers connected. See "Speaker Setup and Output Channel Display" in the following table for details.
This unit can also display the number of channels in the input signal. To view this display, press MPEG/DOLBY DIGITAL to display "MPEG [3/2]" etc., see below for details. Although this table shows almost all of the possible configurations available from MPEG and Dolby Digital (AC-3) signals, only the ones marked "☆" are used in most cases.

Recording Format (Front/Rear)	Input Channel Display	Speaker Setup and Output Channel Display			
		All speakers present	Rear speakers absent	Center speaker absent	Rear/center speakers absent
1/0	MPEG AUDIO [1/0] DOLBY DIGITAL [1/0]	DISCRETE C	DISCRETE C	DISCRETE C	DISCRETE C
2/0*	MPEG AUDIO [2/0] DOLBY DIGITAL [2/0]	L R	L R	L R	L R
3/0	MPEG AUDIO [3/0] DOLBY DIGITAL [3/0]	DISCRETE L C R	DISCRETE L C R	DISCRETE L C R	DISCRETE L C R
2/1	MPEG AUDIO [2/1] DOLBY DIGITAL [2/1]	DISCRETE L R S	DISCRETE L R S	DISCRETE L R S	DISCRETE L R S
3/1	MPEG AUDIO [3/1] DOLBY DIGITAL [3/1]	DISCRETE L C R S	DISCRETE L C R S	DISCRETE L C R S	DISCRETE L C R S
2/2	MPEG AUDIO [2/2] DOLBY DIGITAL [2/2]	DISCRETE L R SL SR	DISCRETE L R SL SR	DISCRETE L R SL SR	DISCRETE L R SL SR
3/2	☆MPEG AUDIO [3/2] ☆DOLBY DIGITAL [3/2]	DISCRETE L C R SL SR	DISCRETE L C R SL SR	DISCRETE L C R SL SR	DISCRETE L C R SL SR
2/0**	☆MPEG AUDIO [2/0] ☆DOLBY DIGITAL [2/0]	L C R PRO LOGIC S	L C R PRO LOGIC S	L C R PRO LOGIC S	L C R PRO LOGIC S
	☆DOLBY PROLOGIC	L C R PRO LOGIC S	L C R PRO LOGIC S	L C R PRO LOGIC S	L C R PRO LOGIC S
	☆STEREO PCM**(kHz)	L R	L R	L R	L R

* Without Pro Logic
** When Pro Logic is ON or Theatre type surround effect (CINEMA STUDIO A~C, etc.) is activated.

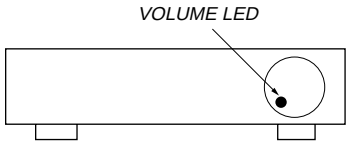
SECTION 3
TEST MODE

Self-Diagnosis and Test Mode

This unit is provided with a "self-diagnosis and self-recovery function" which detects DSP errors and automatically recovers the unit, and a test mode for performing operation checks during repairs.

1. Main Functions

- DSP self-diagnosis and self-recovery function
- Self-diagnosis for servicing and error message display
- Display of history of past DSP errors
- Various operation check mode
- SRAM, EEPROM check function
- Initialization (Differs according to country)



2. Entering the Test Mode

1. While pressing the AC-3 RF button and DIGITAL 2 button simultaneously in the power OFF state, press the POWER button.
2. When the VOLUME LED starts blinking, release these buttons. The self-diagnosis for servicing will be executed, and the operation check mode will be set.
   (**NOTE:** Performing initialization will erase the error history. Do not therefore press the wrong buttons. For details, refer to "5. Initialization" on page 15.)

3. Self-diagnosis Mode for Servicing/Display of History of DSP Errors

3-1. Self-diagnosis Mode for Servicing

Before entering the test mode, first the following self-diagnosis program for servicing will be run.

1. Checks if unintended buttons are being pressed
2. Checks EEPROM (External memory device) operation
3. Read/write test of DSP external memory (1M SRAM)
4. Checks and displays history of various DSP abnormal operations

- **When an error is detected:**
  The error message is displayed for about 8 seconds on the fluorescent display tube, it is switched to "MPEG/DOLBY DIGITAL", and the operation check mode is set. (See Table 1.)
  When several errors occur at the same time, only the first error detected will be displayed.

- **When no error is detected:**
  "Ver. main X. X mpeg X. X" will be displayed, and the operation check mode will be set. (X. X means its version No.)

Table-1:

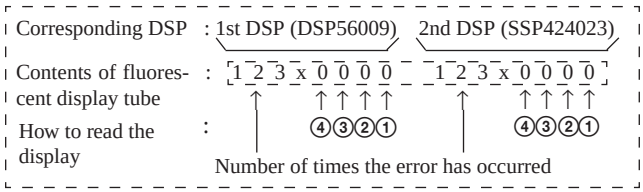
Error Message/Fluorescent Display Tube	Possible Reasons
VOLUME LED blinks and fluorescent display tube is OFF*	An unintended button is pressed, or connection fault of flexible board between MAIN board and DISPLAY board.
EEPROM read error!	Soldering fault or malfunction between IC202 (MAIN board AT24C02) and IC201 (MAIN board microprocessor).
EEPROM write error!	Reached end of IC202 (MAIN board AT24C02) writing life or incorrect insertion of part.
S-RAM access error!	Soldering fault between IC422 (MAIN part 1M SRAM) and IC423 (MAIN board SSP424023) When a DSP error is detected
DSP error detected!	(Refer to "3-2. Display of History of Abnormal DSP Operations".)

***NOTE:**
Refer to "6. Check of Pressing of Unintended Button" on page 15.

3-2. Display of History of DSP Operations

- When “DSP error detected!” is displayed on the fluorescent display tube, the history of DSP errors will be displayed eight seconds later. (See Fig. 1.)
- This history will be displayed if a DSP error has occurred in the past. It helps the detection of malfunction parts by enabling past problems of the unit to be checked.
- This history shows the “Cause of error” and “How many times occurred” for the two DSPs. (See Fig. 1.)

Fig. 1


Corresponding DSP : 1st DSP (DSP56009) 2nd DSP (SSP424023)
Contents of fluorescent display tube : 1 2 3 x 0 0 0 0 1 2 3 x 0 0 0 0
How to read the display : ④③②① ④③②①
Number of times the error has occurred

How to read the display

- The left side shows the errors of the first DSP (DSP56009:MAIN board IC424) and the right side shows the errors of the second DSP (SSP424023:MAIN board IC423).
- The “How many times occurred” indicates the number of times that the error has occurred. If an error has occurred more than 256 times, it will be displayed as 256.
- The ① ② ③ ④ part shows 0 or 1 according to the cause of the error. If an error has occurred, 1 will be displayed. If no error has occurred, 0 will be displayed. (See Table-2.)

Table-2:

Cause of error	Possible cause
① Failed in initial booting	Mostly due to faulty connection (soldering) between DSP and microprocessor
② DSP does not operate	Faulty DSP clock (X401 and onwards), faulty DSP part, etc.
③ Communication port malfunction	Overrunning of DSP due to heat, microprocessor bugging, or IC301 (MAIN board PLL) is faulty
④ No reply from DSP	Faulty DSP part, or faulty microprocessor part, etc.

NOTE: This history is memorized in the EEPROM until the unit is initialized. (Refer to “5. Initialization” on page 15.)

4. Operation Check Mode

- During the operation check mode, functions can be set by pressing the corresponding button. (See Table-3.)
- Each time a button is pressed, the corresponding function will be displayed for about 8 seconds.
- Buttons other than those displayed in Table-3 operate usually.

NOTE: Do not press the SET UP button during the operation check mode. As this button is provided with a special function for debugging, pressing it may impede the normal output of signals in the sub-woofer mode.

Table-3:

Button	Fluorescent Display Tube Display	Function
DIGITAL2	DIG-2 (L-SL, R-SR)	Outputs the Lch DIGITAL-2 input signal to the REAR Lch and the Rch to the REAR Rch.
DIGITAL3	DIG-3 (L-C, R-SW)	Outputs the Lch DIGITAL-3 input signal to the CENTER and the Rch only to the WOOFER.
DIGITAL4	DIG-4 (L, R-ALL)	Outputs the Lch DIGITAL-4 input signal to the FRONT Lch, REAR Lch, CENTER, and the Rch to the FRONT Rch, REAR Rch, and CENTER.
OFF	Whole fluorescent display tube lit check Each time the button is pressed, the fluorescent display tube lights up as follows. Lit totally→Lit partially 1→Lit partially 2→Lit totally....	

By pressing the MENU knob and displaying “<<< LEVEL ADJUST >>>”, and rotating the +/– knob to the right, the input signal selected at that time can be output to any Lch or Rch channel.
(See Table-4.)

Table-4:

Fluorescent Display Tube Display	Output Destination of Input Signal
Exchange (L-SL, R=SR)	Outputs the FRONT Lch/Rch signal only to the REAR Lch/Rch.
Exchange (L-C, R=SW)	Outputs the FRONT Lch signal only to the REAR Lch, and FRONT Rch signal to the REAR Rch.
Exchange (NORMAL)	Outputs the FRONT Lch/Rch signal to the FRONT Lch/Rch, the REAR Lch/Rch signal to the REAR Lch/Rch, the CENTER signal to CENTER, and the WOOFER signal to WOOFER as usual.
Exchange (L, R-ALL)	Outputs the FRONT Lch signal to the FRONT Lch, REAR Lch, and CENTER, and the FRONT Rch signal to the FRONT Rch, the REAR Rch, WOOFER.

5. Initialization (Differs according to destination)

After executing the test mode, be sure to perform initialization.

- **For J/SP/AEP Version (Use this procedure)**
  While pressing the AC-3 RF button and DIGITAL3 buttons simultaneously, press the POWER button. When the VOLUME LED starts blinking, release the buttons. "initialized (J/SP/AEP)" will be displayed on the fluorescent display tube, and all internal settings will be returned to the initial values.

- **For U/CA version (Do not use this procedure)**
  While pressing the AC-3 RF button and DIGITAL4 buttons simultaneously, press the POWER button. When the VOLUME LED starts blinking, release the buttons. "initialized (U/CA)" will be displayed on the fluorescent display tube, and all internal settings will be returned to the initial values.

NOTE: As all histories of abnormal DSP operations will be erased, note down the contents of the history beforehand.

6. Check of Pressing of Unintended Button

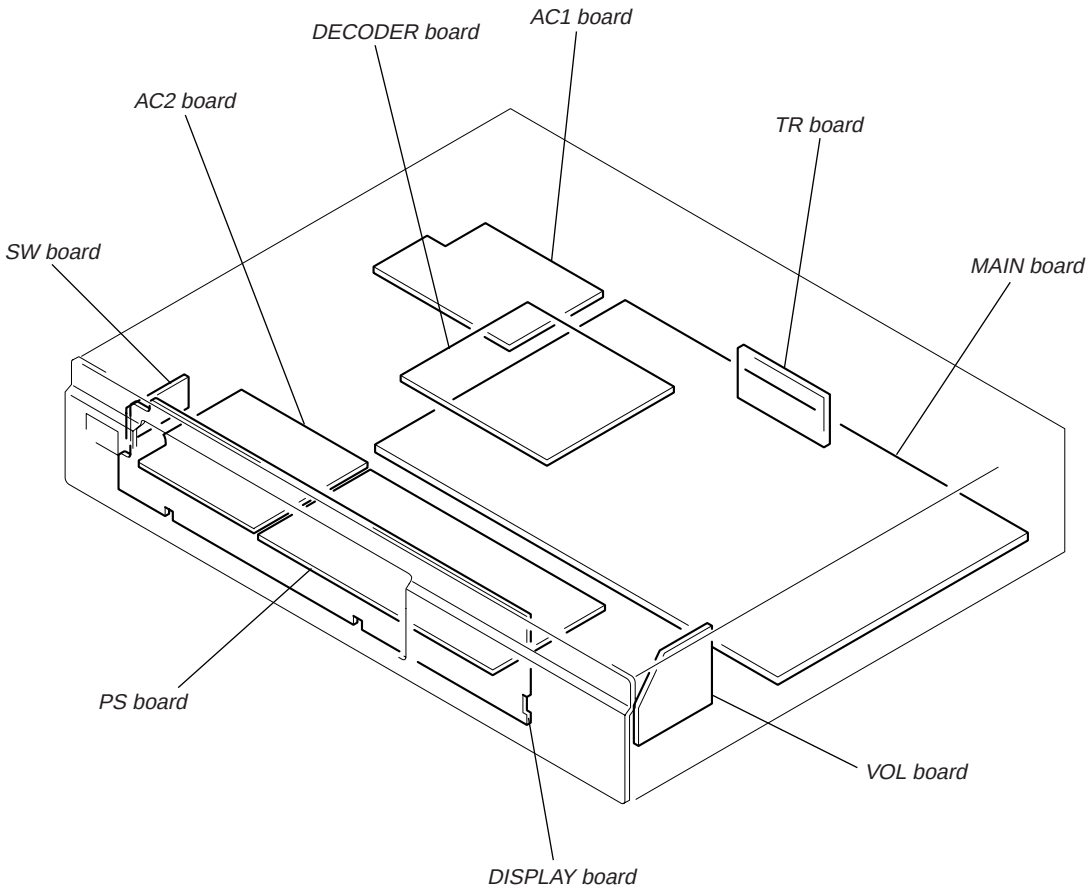
- This check is always performed when the power is turned ON. Therefore when an error occurs, it can be known without setting the test mode because the VOLUME LED blinks and the fluorescent display tube stops displaying.
- When an unintended button is pressed during the test mode or initialization, the VOLUME LED also blinks, and the fluorescent display tube stops displaying, preventing no mode to be set.

7. Other Functions

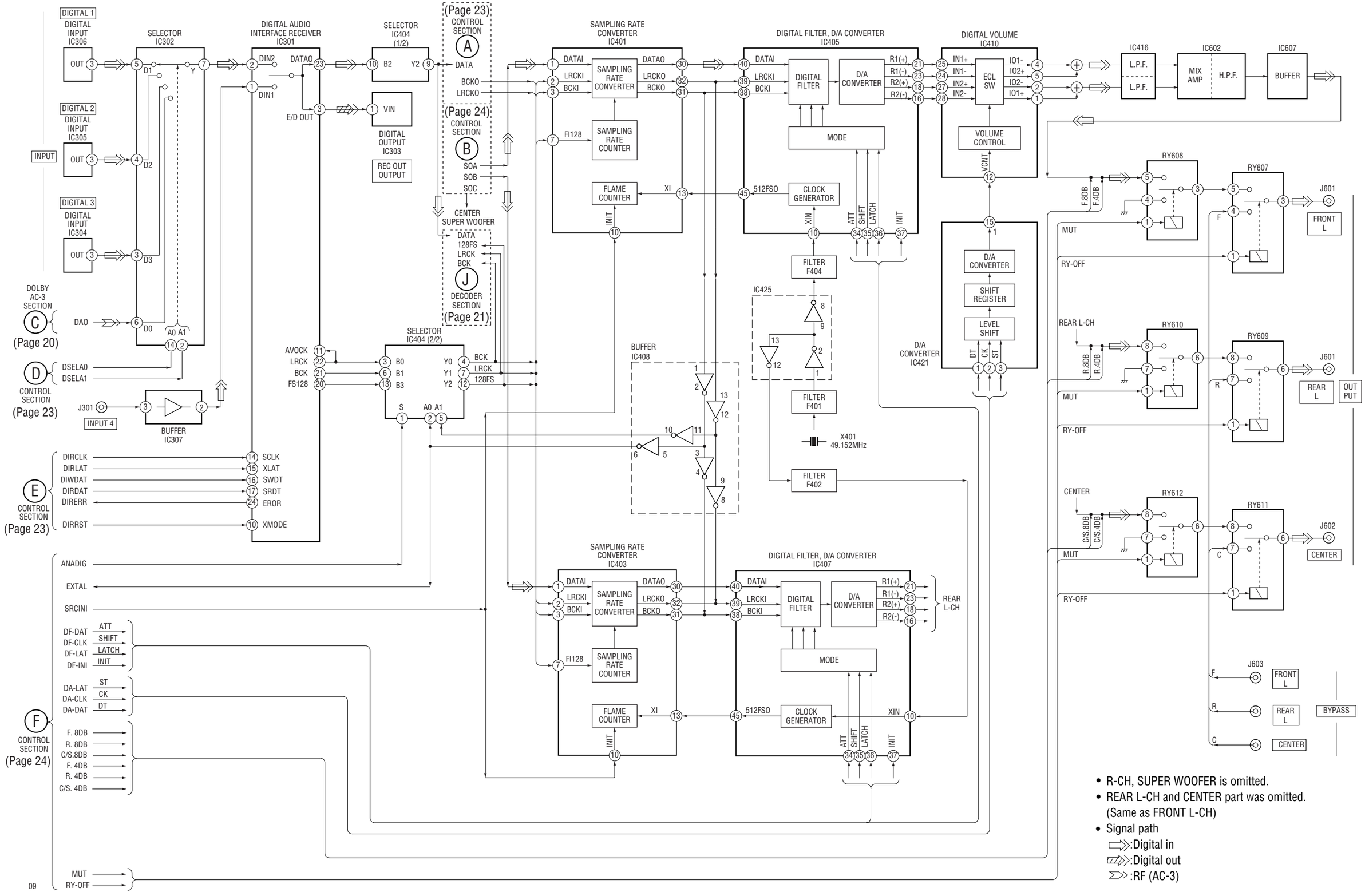
In the personal use of the unit at home, if no sounds are produced due to DSP problems, the DSP will be rebooted automatically to attempt recovery. If no sounds are still produced after five retries, "Turn POWER SW off!" will be displayed on the fluorescent display tube.
If this problem occurs, it indicates that the DSP is faulty or the user's setting environment may be unsuitable. Refer to "3. Self-Diagnosis Mode for Servicing/Display of History of DSP Errors" on page 13 to identify the problems.

SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION

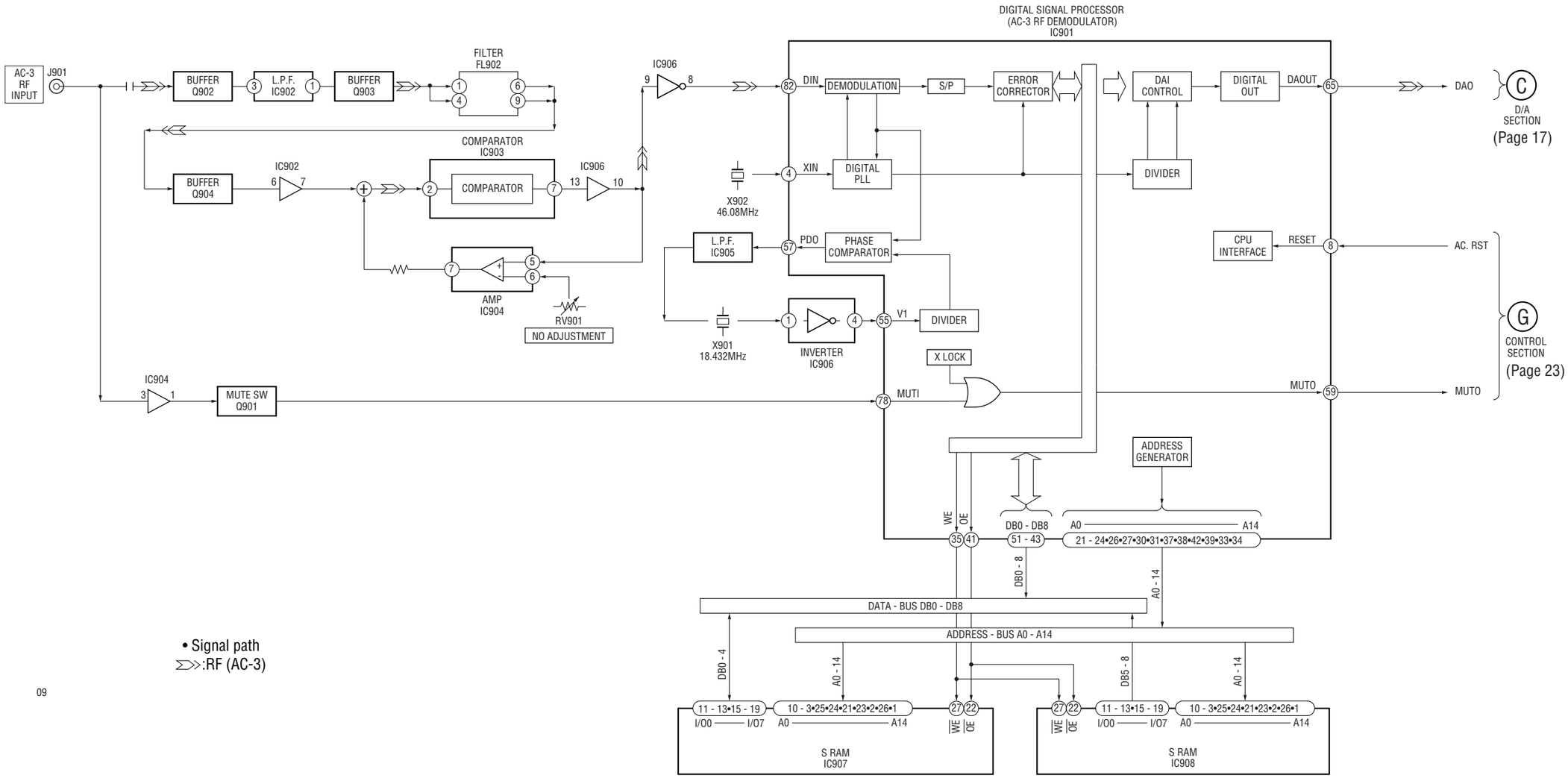


4-2. BLOCK DIAGRAMS
– DA SECTION –



- R-CH, SUPER WOOFER is omitted.
- REAR L-CH and CENTER part was omitted. (Same as FRONT L-CH)
- Signal path
  ⇨:Digital in
  ⇨:Digital out
  ⇨:RF (AC-3)

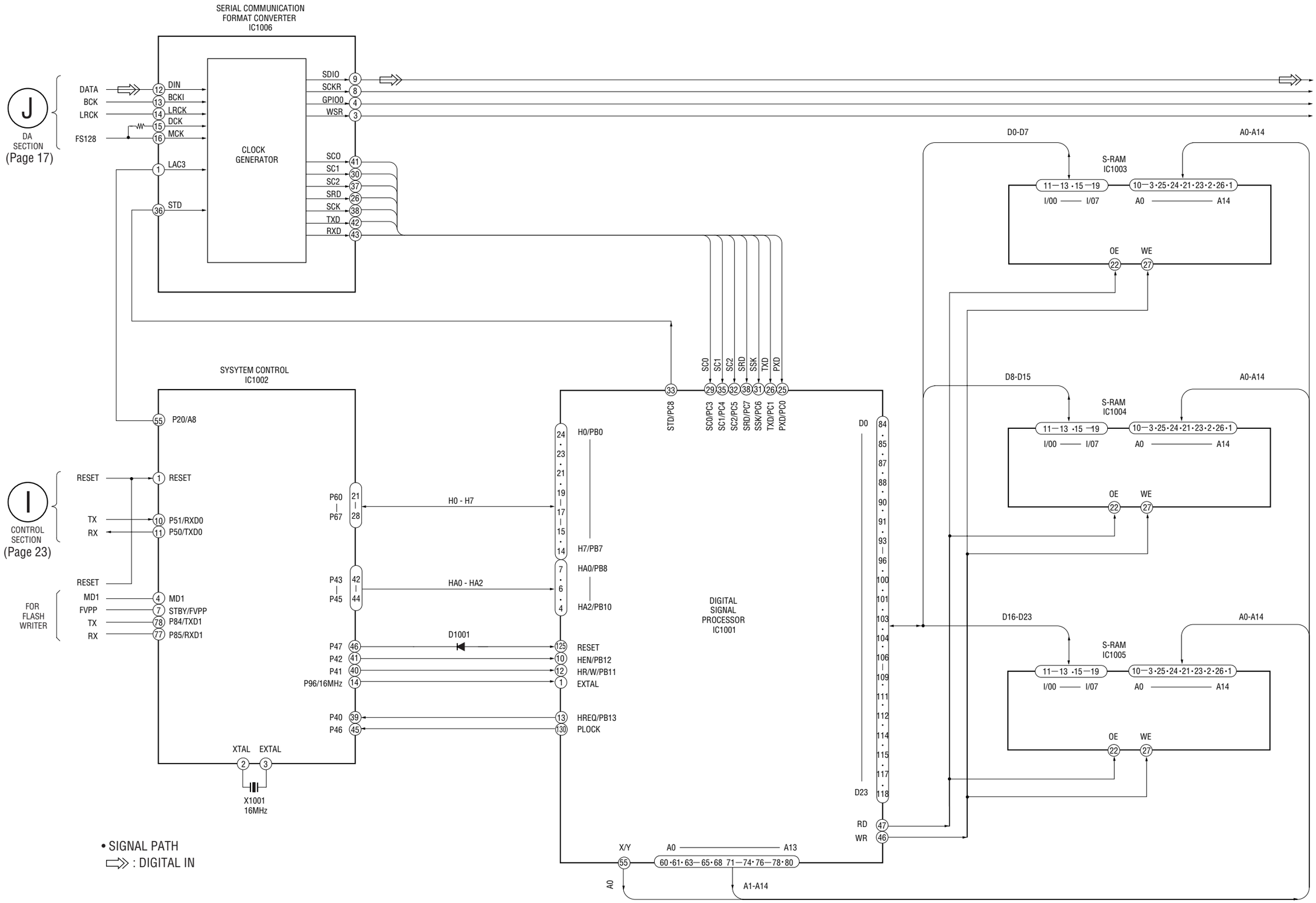
– AC-3 (RF) SECTION –



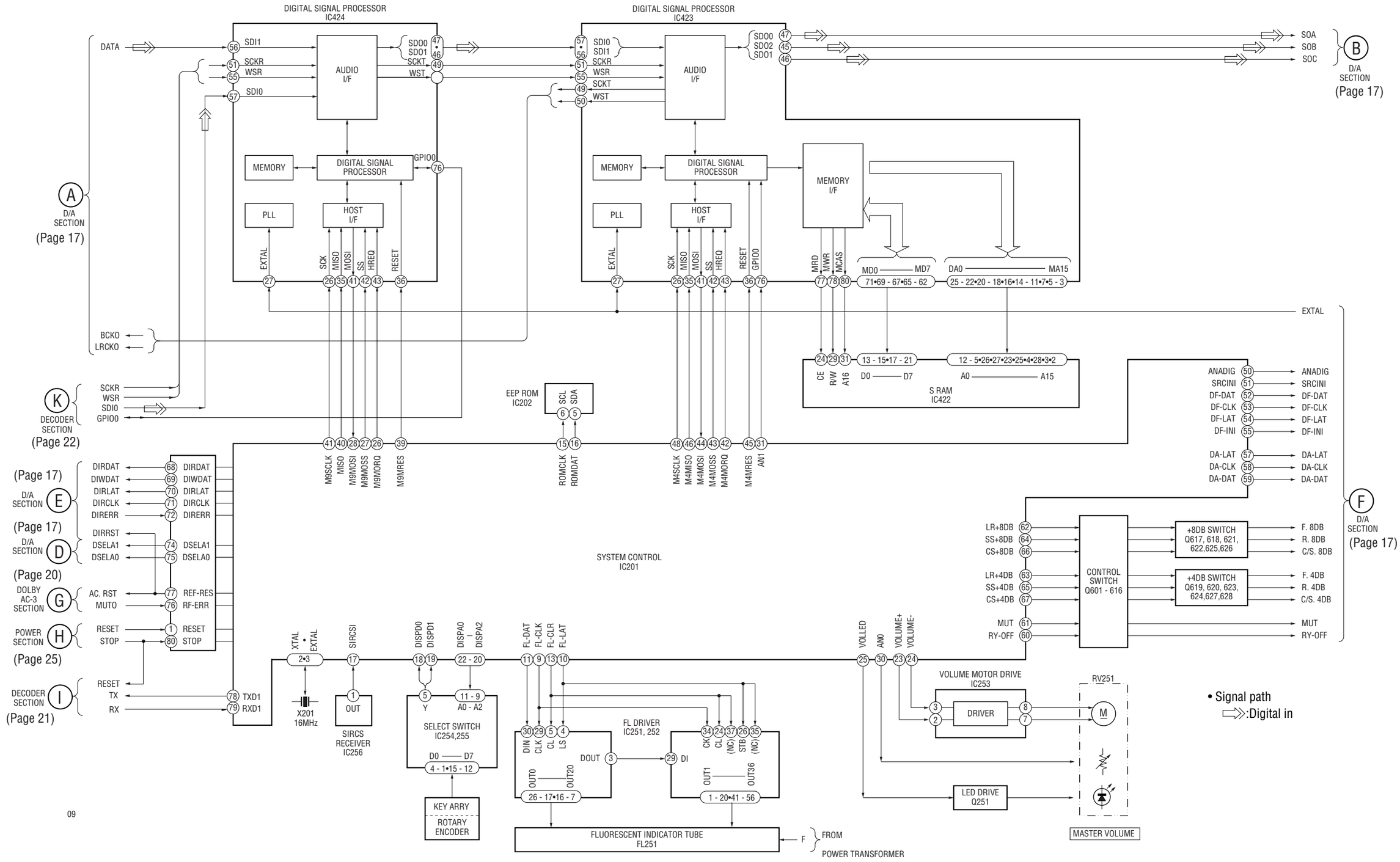
• Signal path
≥≥:RF (AC-3)

09

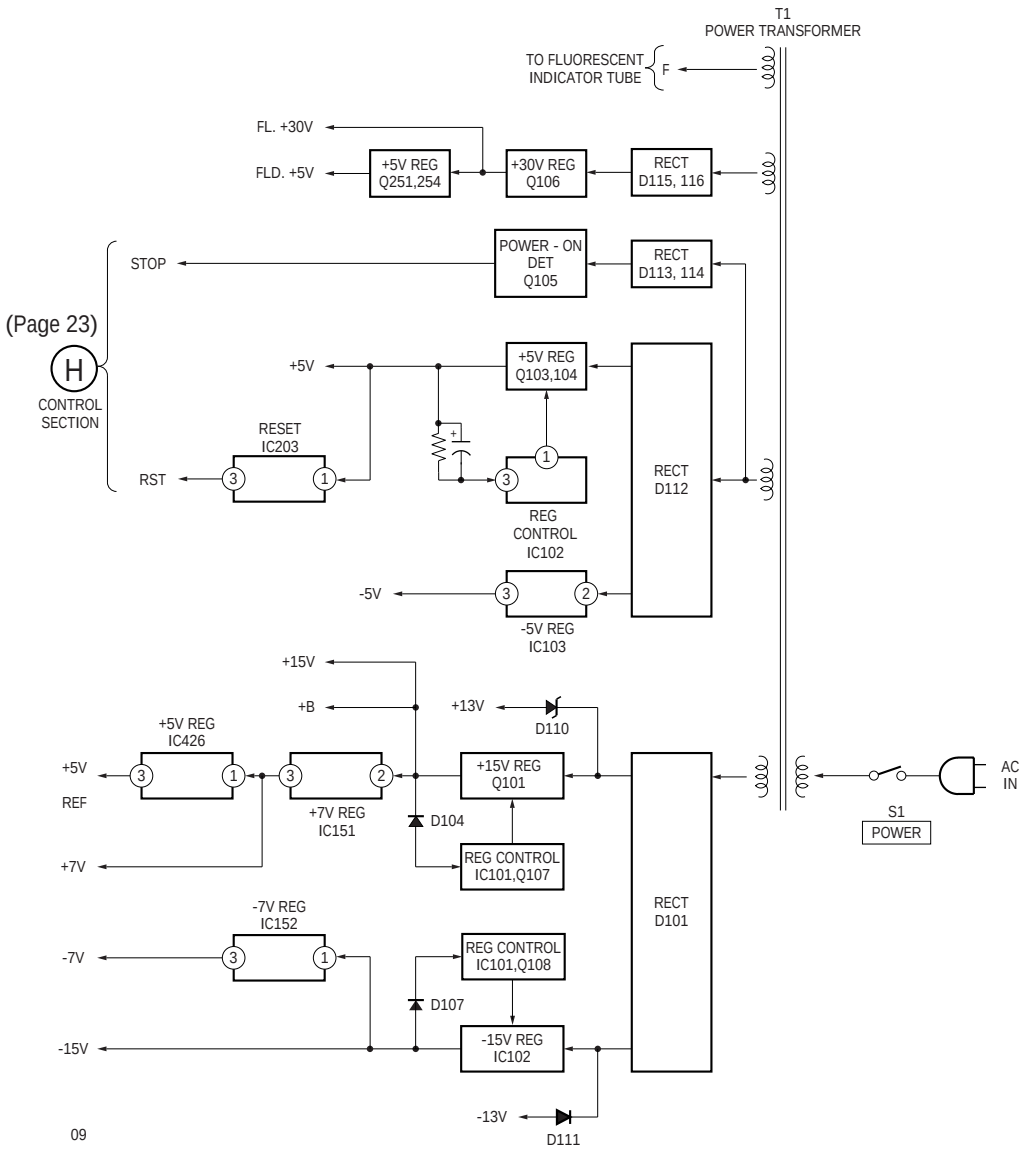
– DECODER SECTION –



– CONTROL SECTION –



– POWER SECTION –



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- The resistance indicated MF shows tolerance 2%.
- △ : internal component.
- : fusible resistor.
- : fusible resistor.
- : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- B + : B+ Line.
- B − : B– Line.
- : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  ＊ : Can not be measured.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : RF (AC-3)
  : digital in
  : digital out

For printed wiring boards.

Note:

- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ○ : Through hole.
- △ : internal component.
- : Pattern from the side which enables seeing.

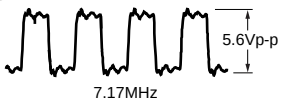
(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

WAVEFORMS

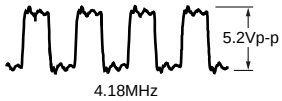
– MAIN BOARD (1/4) –

①



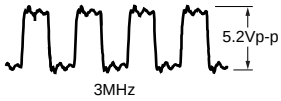
IC423 ㊿① (SCKR)

②



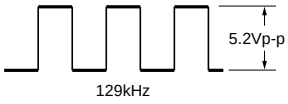
IC423 ㊾ (SCKT)

③



IC423 ㉗ (EXTAL)

④

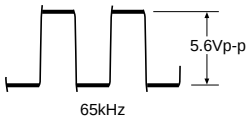


IC201 ⑨ (FL-CLK)

⑤

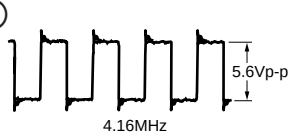
IC201 ② (XTAL)

⑥



IC301 ㉒ (LRCK)

⑦



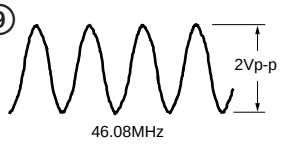
IC301 ㉑ (BCK)

⑧

IC301 ⑳ (FS128)

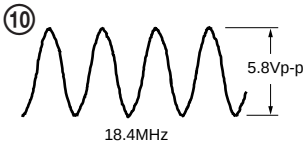
– MAIN BOARD (2/4) –

⑨



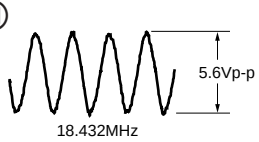
IC901 ④ (XIN)

⑩



IC901 ㊺ (V1)

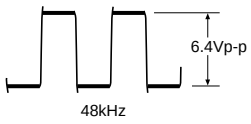
⑪



IC906 ②

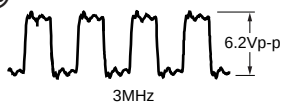
– MAIN BOARD (4/4) –

⑫



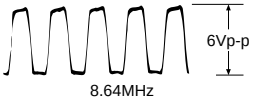
IC401 ㉜ (LRCKO)

⑬



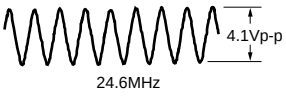
IC401 ㉛ (BCKO)

⑭



IC401 ⑦ (FI128)

⑮



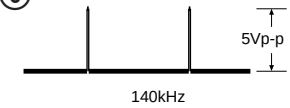
IC405 ㊺ (512F20)

– DECODER BOARD –

①

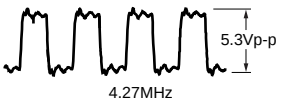
IC1006 ⑧ (SCKR)

⑥



IC1006 ㉚ (SC1)

②

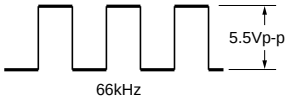


IC1006 ⑬ (BCKI)

⑦

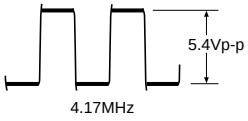
IC1006 ㊲ (SC2)

③



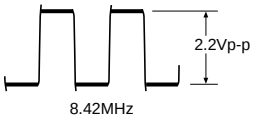
IC1006 ⑭ (LRCK)

⑧



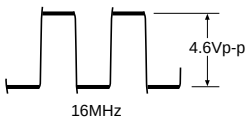
IC1006 ㊶ (SC0)

④



IC1006 ⑮ (DCK)

⑨



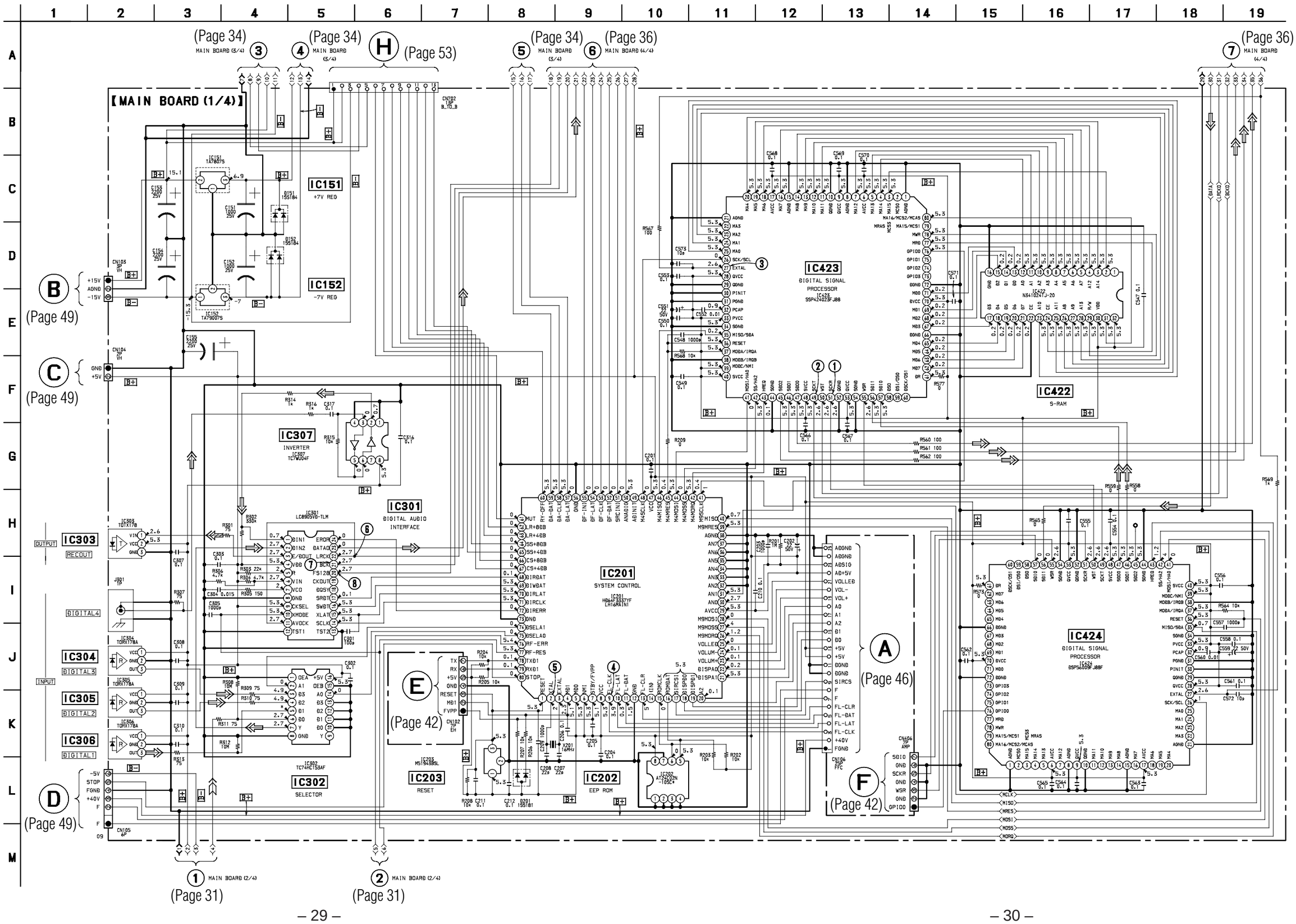
IC1002 ② (XTAL)

⑤

IC1006 ⑯ (MCK)

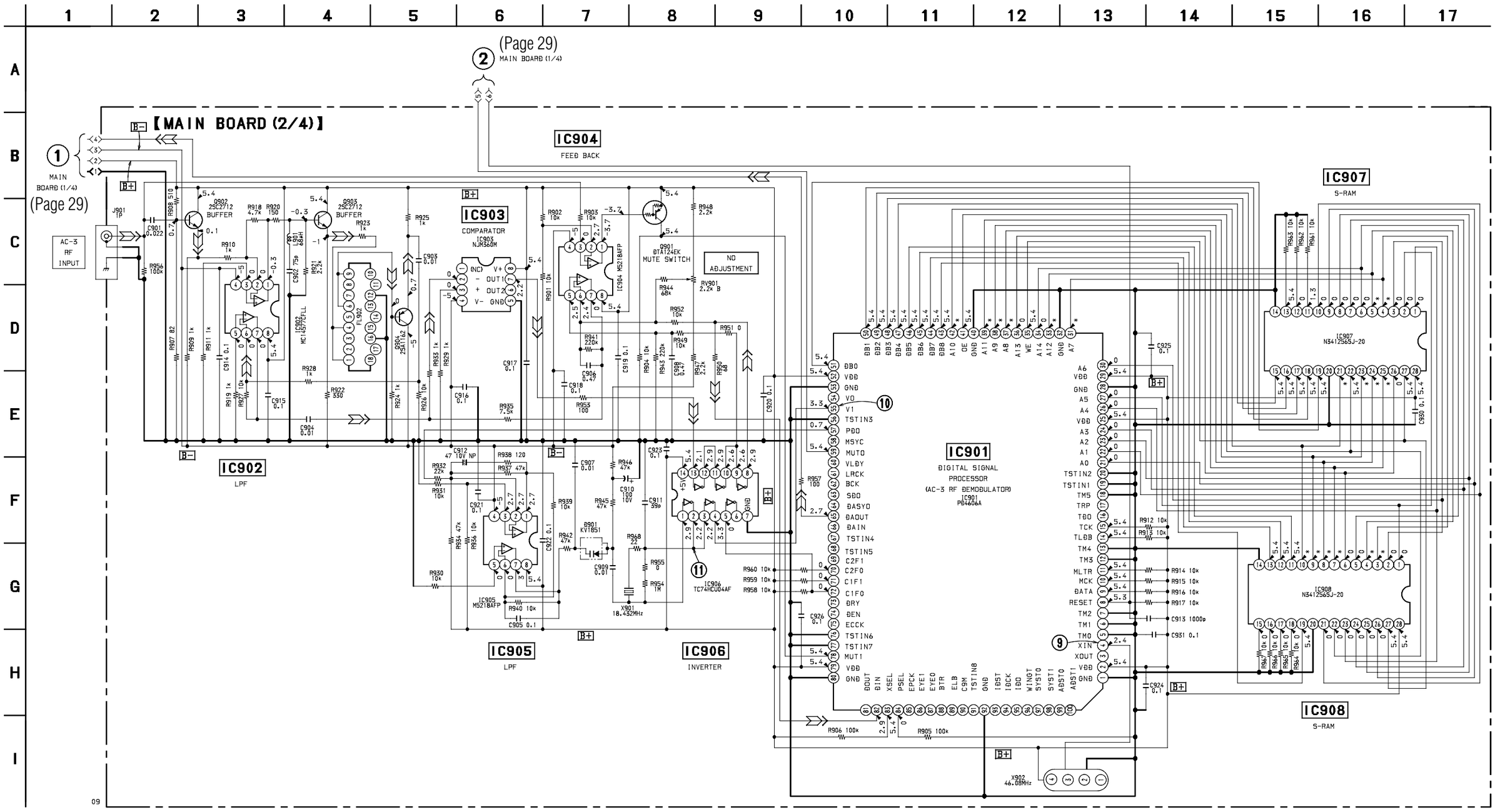
4-3. SCHEMATIC DIAGRAM – INPUT SECTION –

- See page 27 for Waveforms.
- See page 37, 39 for Printed Wiring Board.
- See page 55, 59 for IC Pin Functions.
- See page 72 for IC Block Diagrams.



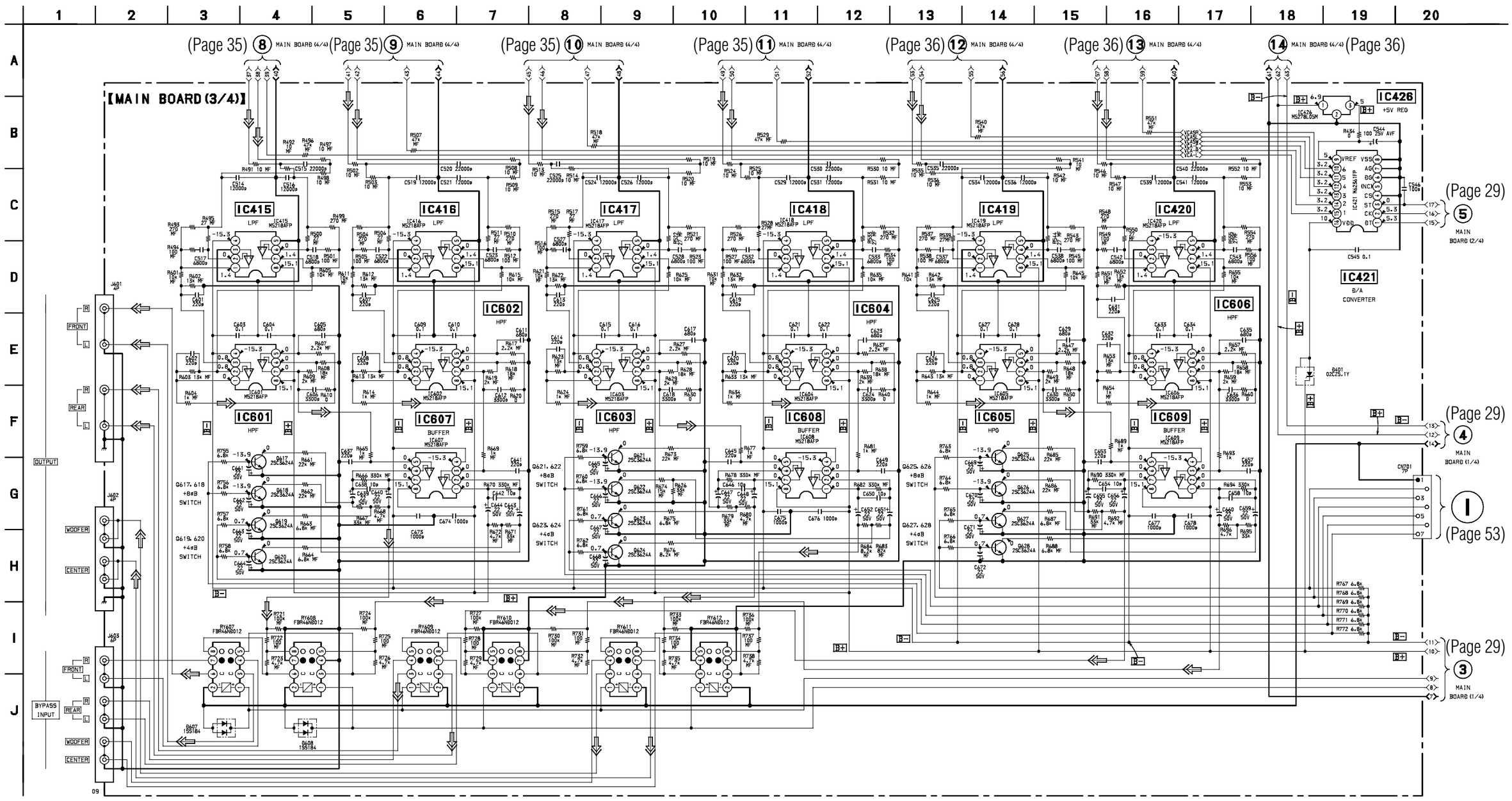
4-4. SCHEMATIC DIAGRAM – DOLBY AC-3 SECTION –

- **See page 28 for Waveforms.**
- **See page 37, 39 for Printed Wiring Board.**
- **See page 63 for IC Pin Functions.**
- **See page 74 for IC Block Diagrams.**



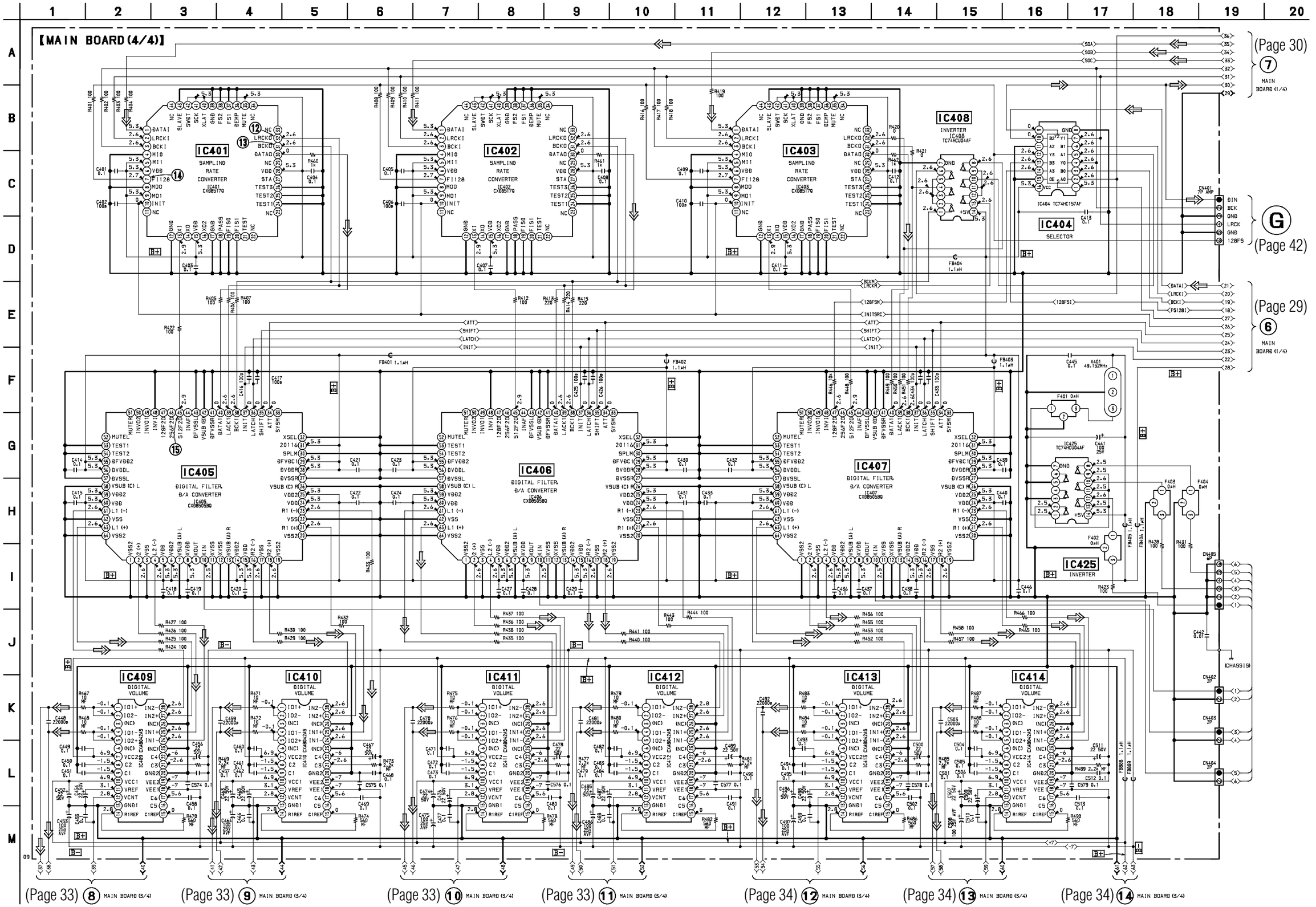
4-5. SCHEMATIC DIAGRAM – OUTPUT SECTION –

- See page 37, 39 for Printed Wiring Board.
- See page 73 for IC Block Diagrams.



4-6. SCHEMATIC DIAGRAM – DA CONVERTER SECTION –

- **See page 37, 39 for Printed Wiring Board.**
- **See page 58 for IC Pin Functions.**
- **See page 73 for IC Block Diagrams.**



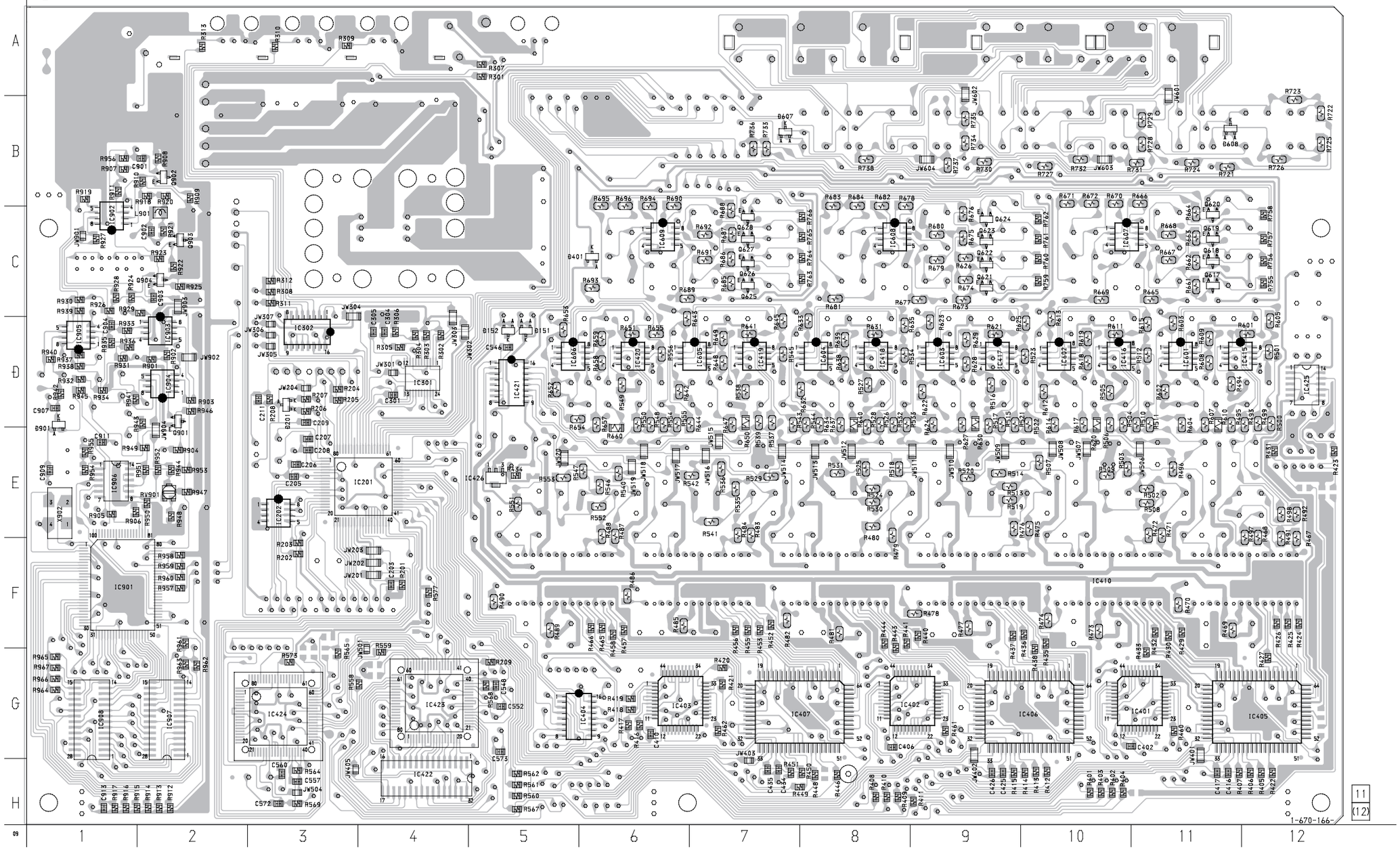
4-7. PRINTED WIRING BOARD – MAIN SECTION – (SIDE A)

• See page 16 for Circuit Boards Location.

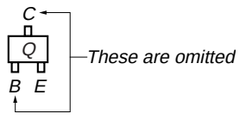
• **Semiconductor Location**

Ref. No.	Location
D151	D-5
D152	D-5
D201	D-3
D401	C-6
D607	B-7
D608	B-11
D901	D-1
IC201	E-4
IC202	E-3
IC301	D-4
IC302	D-3
IC401	G-11
IC402	G-9
IC403	G-6
IC404	G-6
IC405	G-12
IC406	G-10
IC407	G-8
IC415	D-12
IC416	D-10
IC417	D-9
IC418	D-8
IC419	D-7
IC420	D-6
IC421	D-5
IC422	H-4
IC423	G-4
IC424	G-3
IC425	D-12
IC426	E-5
IC601	D-11
IC602	D-10
IC603	D-9
IC604	D-8
IC605	D-7
IC606	D-5
IC607	C-11
IC608	C-8
IC609	C-6
IC901	F-1
IC902	C-1
IC903	D-2
IC904	D-2
IC905	D-1
IC906	E-1
IC907	G-2
IC908	G-1
Q617	C-11
Q618	C-11
Q619	C-11
Q620	C-11
Q621	C-9
Q622	C-9
Q623	C-9
Q624	C-9
Q625	C-7
Q626	C-7
Q627	C-7
Q628	C-7
Q901	D-2
Q902	B-2
Q903	C-2
Q904	C-2

【 MAIN BOARD 】(SIDE A)



• **Indication of transistor**

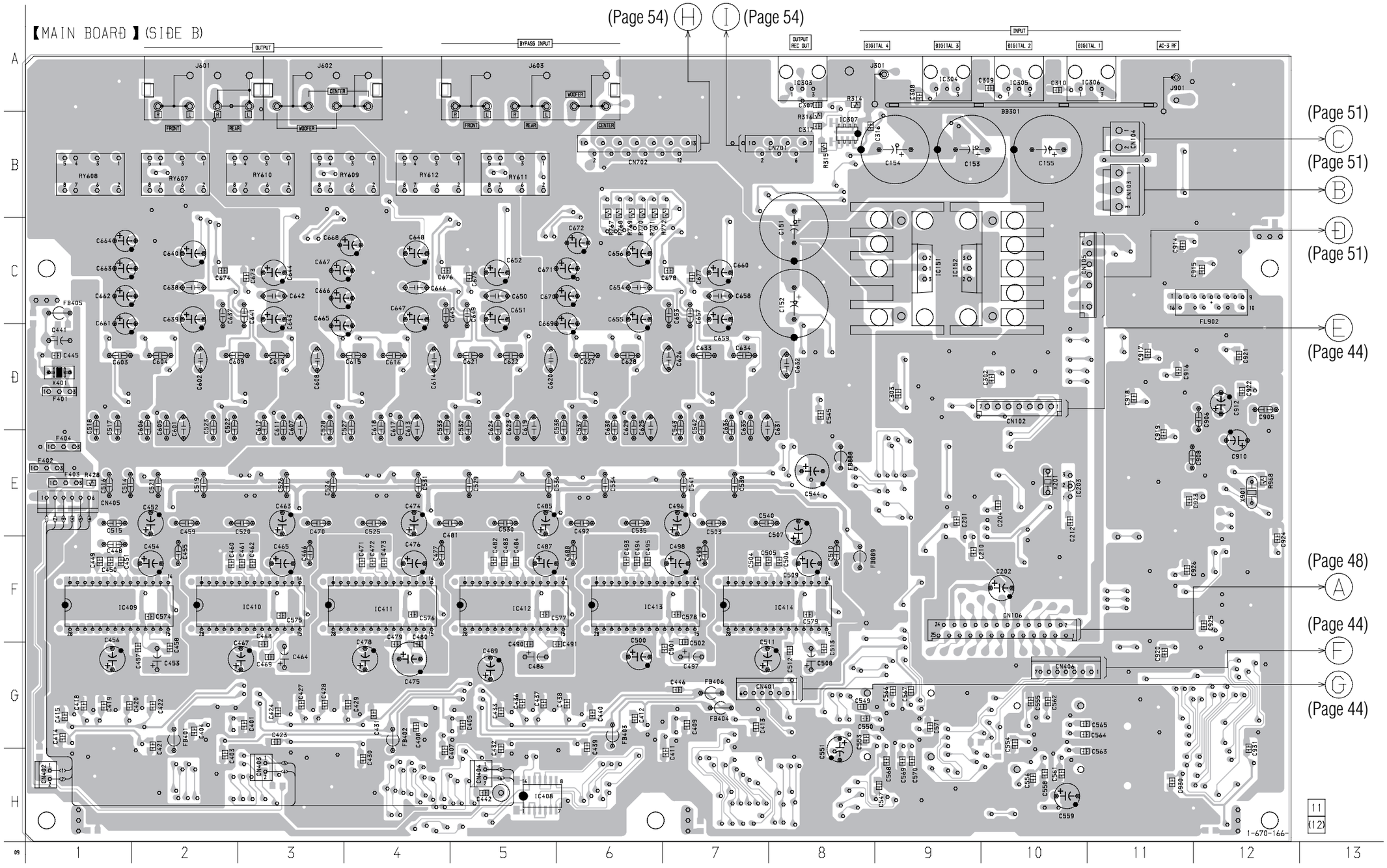


PRINTED WIRING BOARD – MAIN SECTION – (SIDE B)

• See page 16 for Circuit Boards Location.

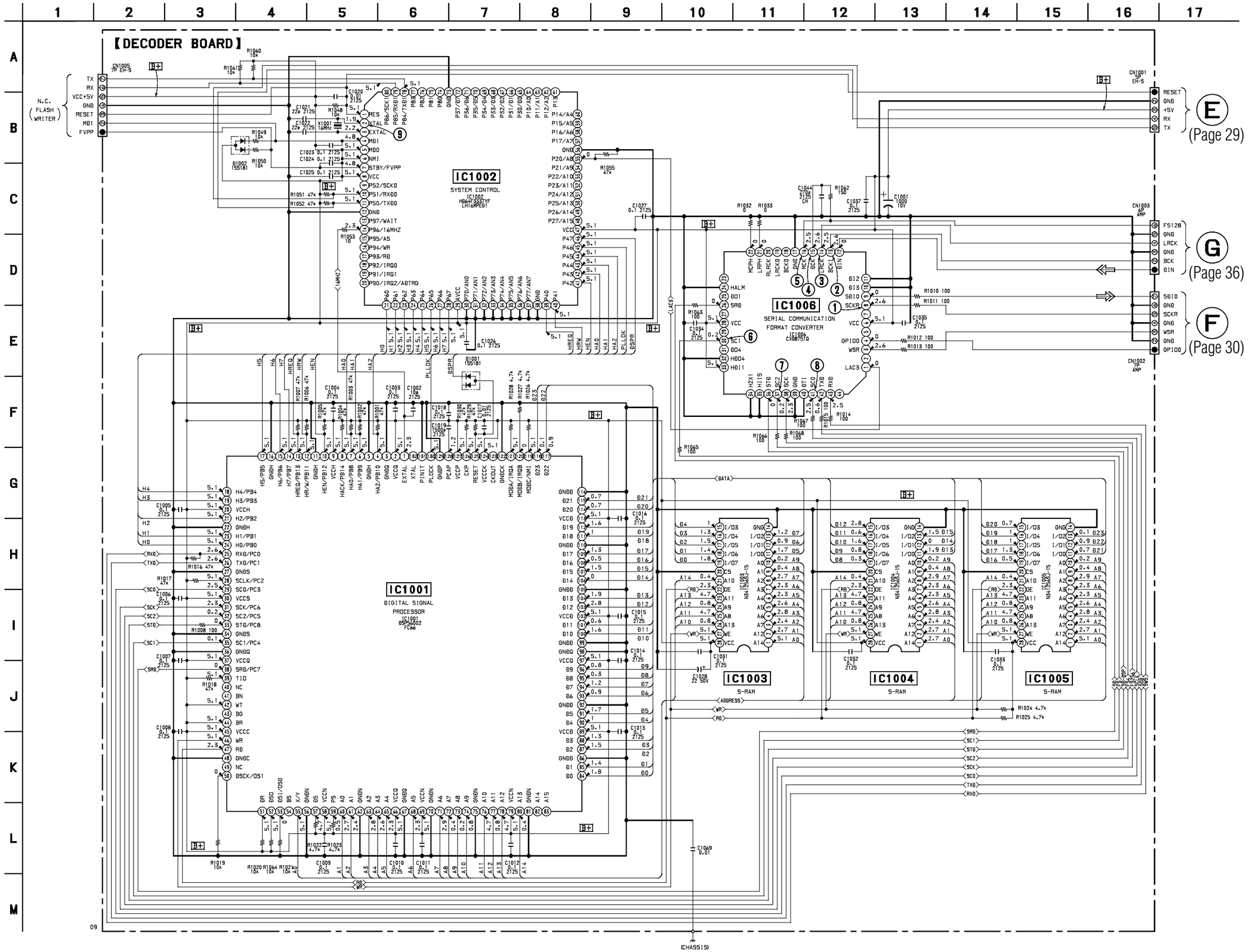
- **Semiconductor Location**

Ref. No.	Location
IC151	C-9
IC152	C-9
IC203	E-10
IC303	A-8
IC304	A-9
IC305	A-10
IC306	A-11
IC307	B-8
IC408	H-5
IC409	F-1
IC410	F-3
IC411	F-4
IC412	F-5
IC413	F-6
IC414	F-8



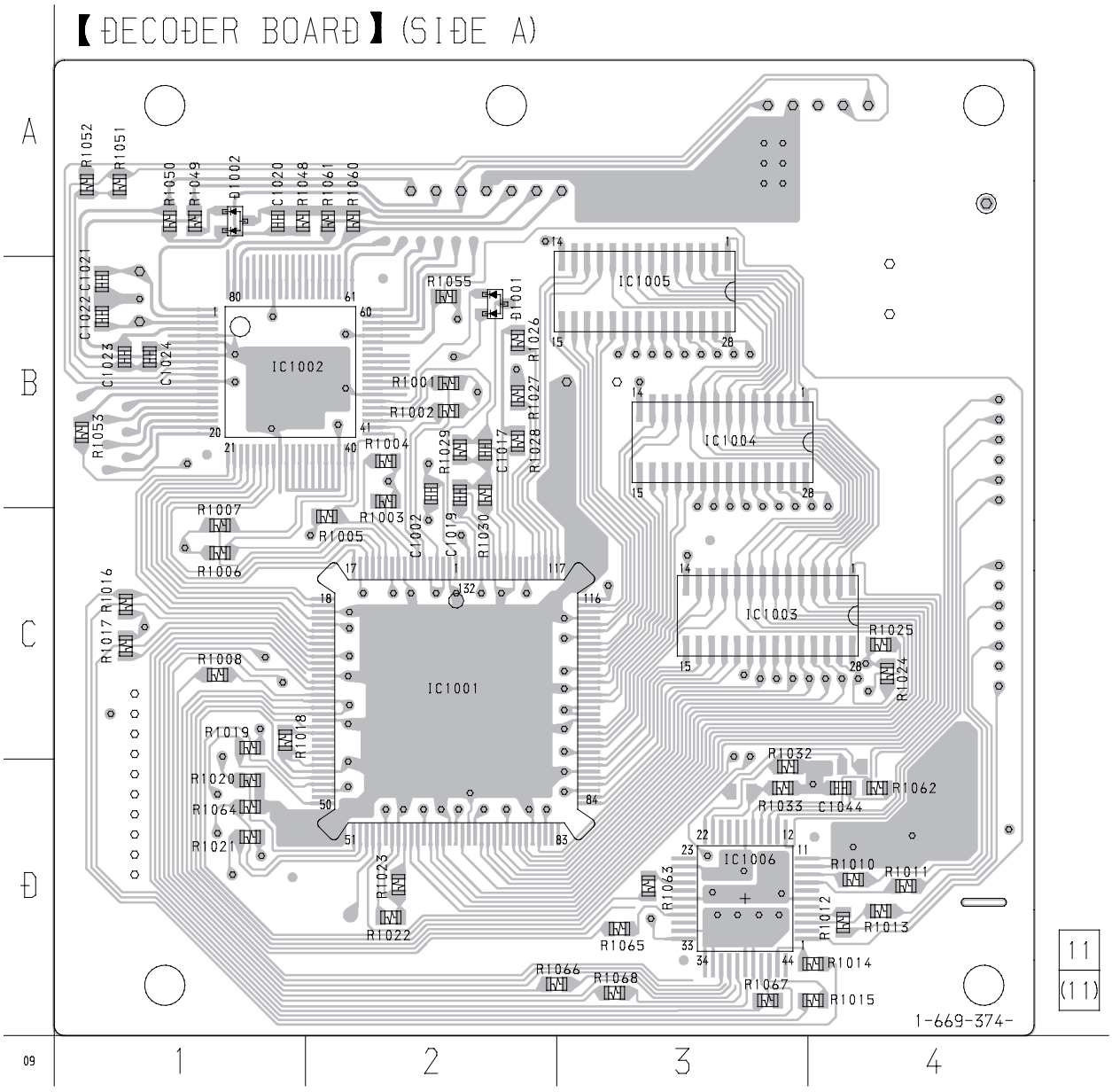
4-8. SCHEMATIC DIAGRAM – DECODER SECTION –

- See page 28 for Waveforms.
- See page 66 for IC Pin Functions.



4-9. PRINTED WIRING BOARD – DECODER SECTION –

• See page 16 for Circuit Boards Location.

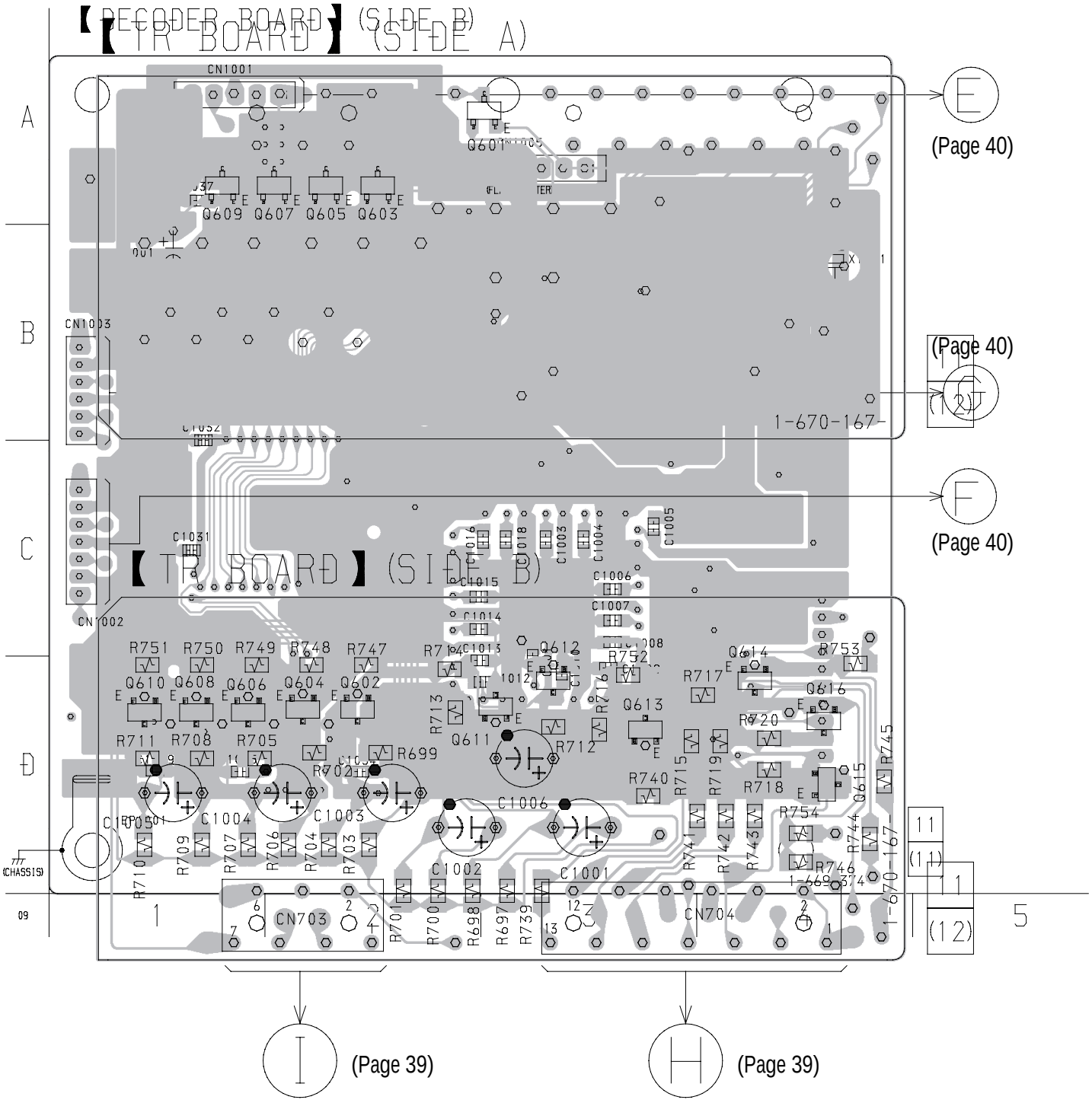


• **Semiconductor Location**

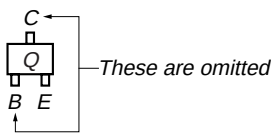
Ref. No.	Location
D1001	B-2
D1002	A-1
IC1001	C-2
IC1002	B-1
IC1003	C-3
IC1004	B-3
IC1005	B-3
IC1006	D-3

4-15. PRINTED WIRING BOARD – CONTROL SW SECTION –

• See page 16 for Circuit Boards Location.

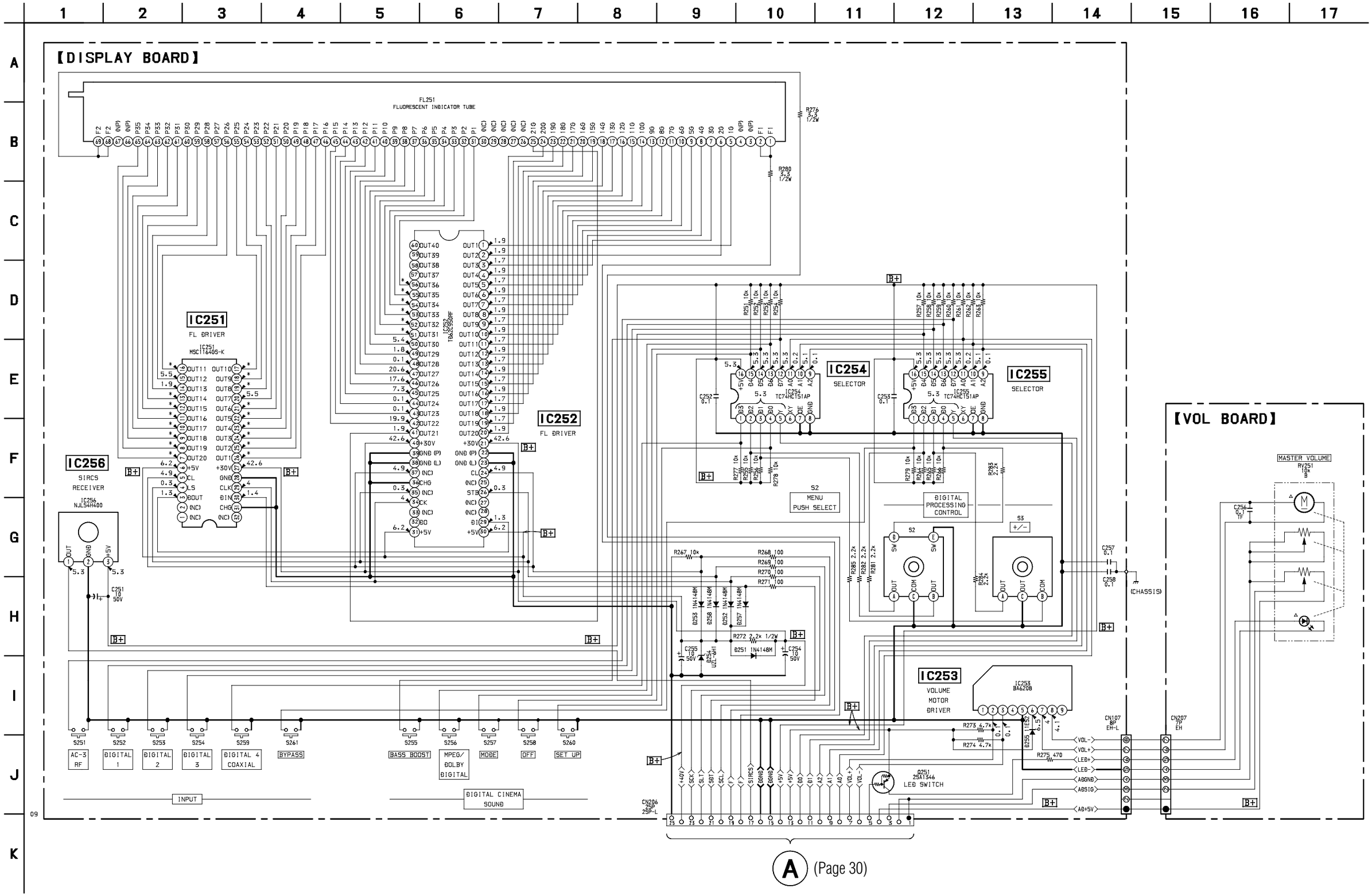


• **Indication of transistor**



4-10. SCHEMATIC DIAGRAM – DISPLAY SECTION –

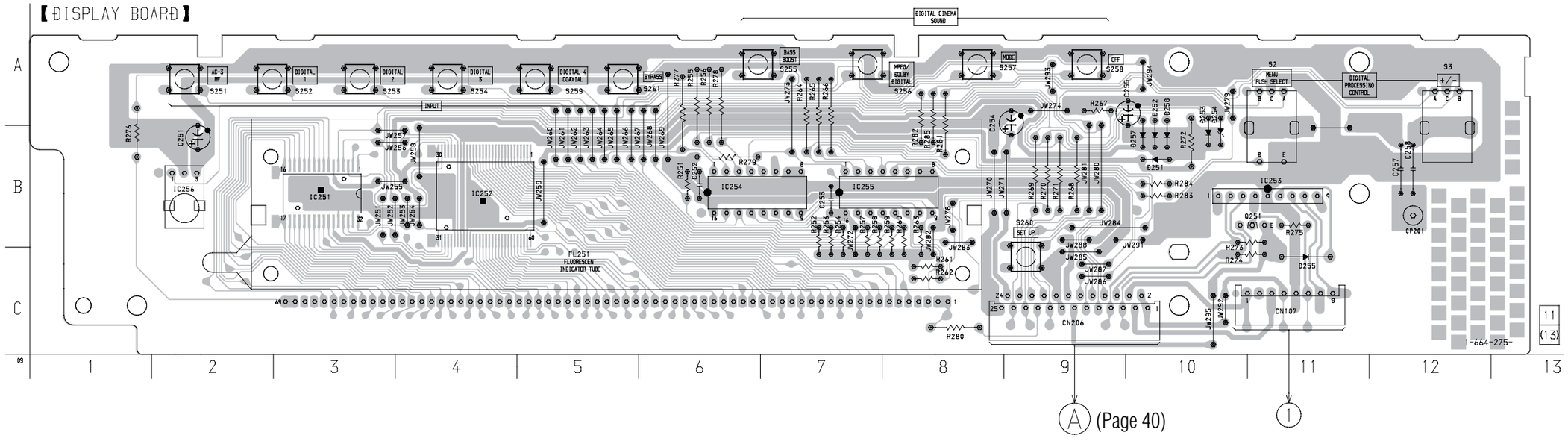
• See page 75 for IC Block Diagrams.



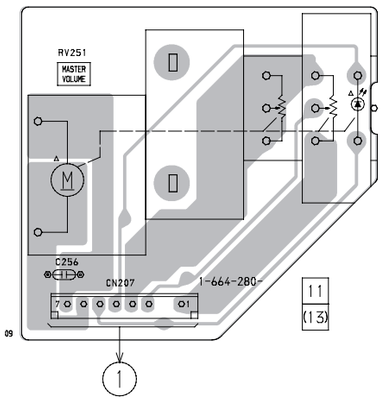
4-11. PRINTED WIRING BOARD – DISPLAY SECTION –

• See page 16 for Circuit Boards Location.

【DISPLAY BOARD】



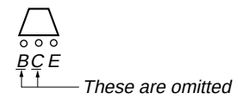
【VOL BOARD】



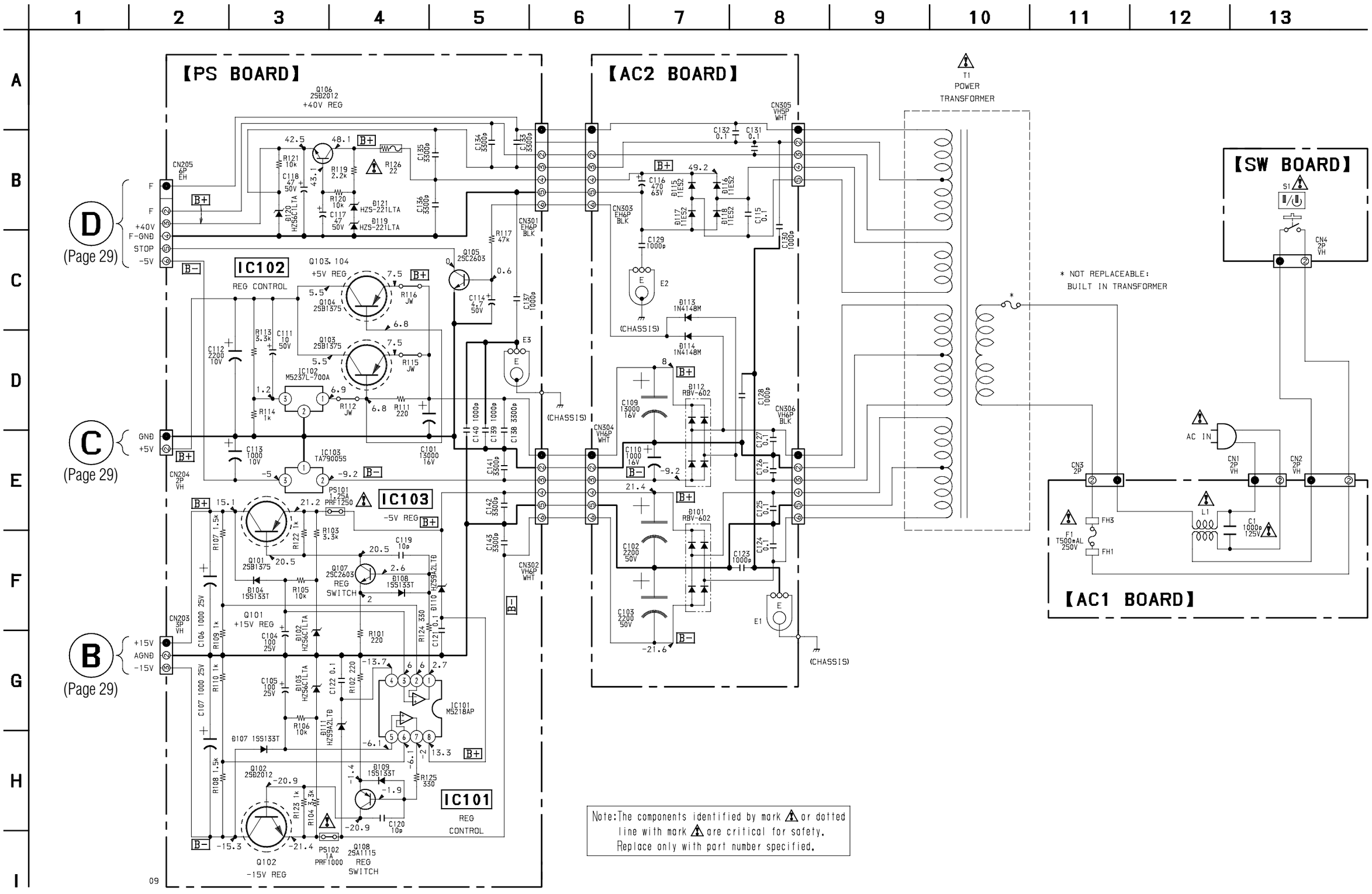
• **Semiconductor Location**

Ref. No.	Location
D251	B-10
D252	B-10
D253	B-10
D254	B-10
D255	C-11
D257	B-10
D258	B-10
IC251	B-3
IC252	B-4
IC253	B-11
IC254	B-6
IC255	B-8
IC256	B-2
Q251	B-11

• **Indication of transistor**



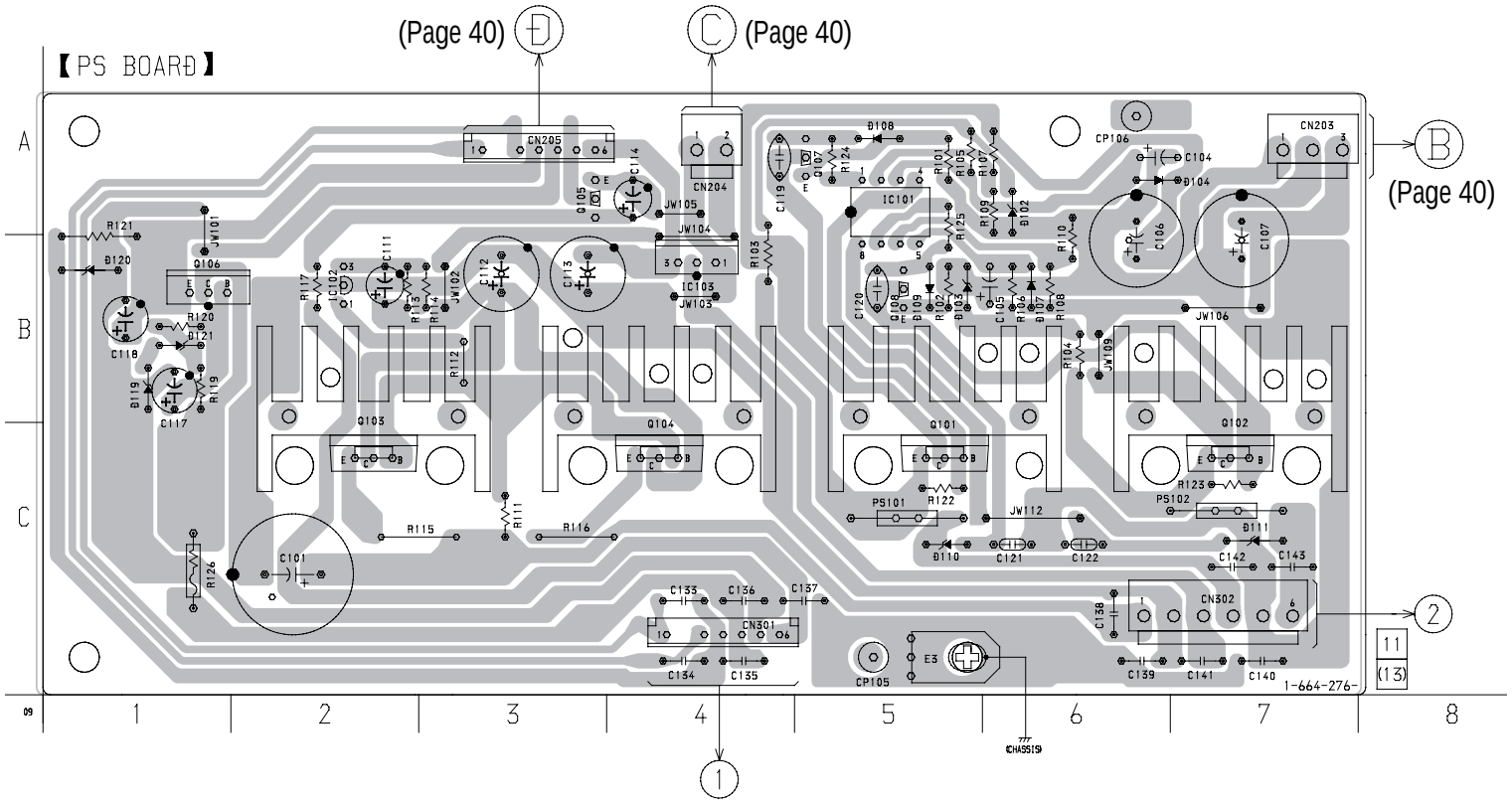
4-12. SCHEMATIC DIAGRAM – POWER SECTION –

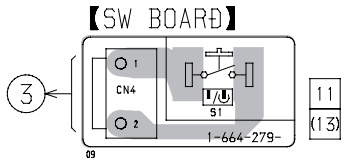


Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

4-13. PRINTED WIRING BOARD – POWER SECTION –

• See page 16 for Circuit Boards Location.

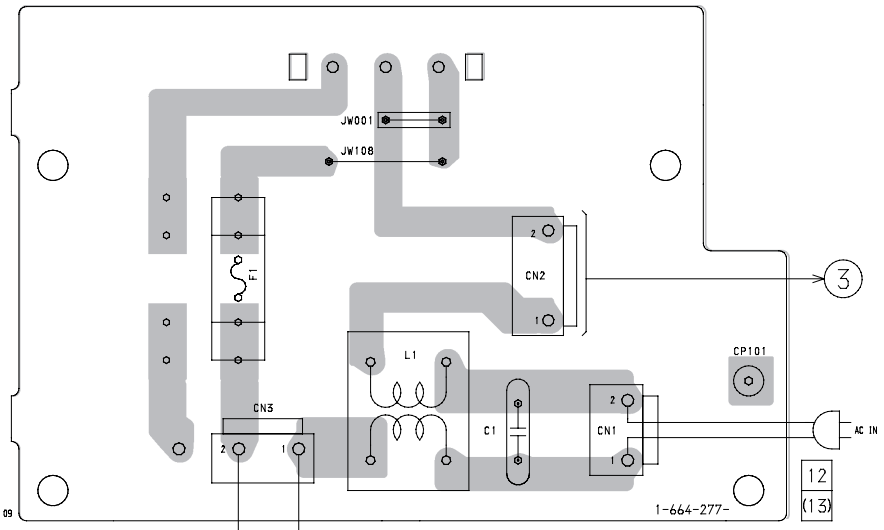


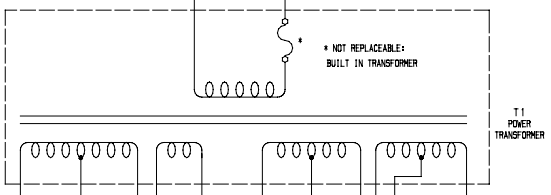


• **Semiconductor Location**

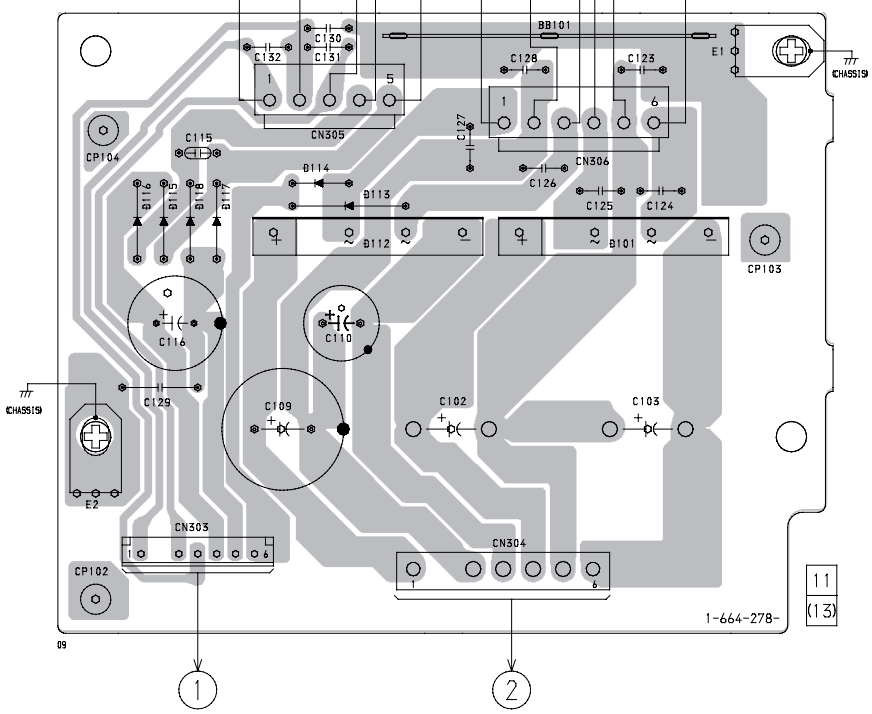
Ref. No.	Location
D102	A-6
D103	B-5
D104	A-6
D107	B-6
D108	A-5
D109	B-5
D110	C-5
D111	C-7
D119	B-1
D120	B-1
D121	B-1
IC101	A-5
IC102	B-2
IC103	B-4
Q101	B-5
Q102	B-7
Q103	B-2
Q104	B-4
Q105	A-3
Q106	B-1
Q107	A-5
Q108	B-5

【AC1 BOARD】

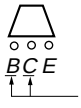




【AC2 BOARD】

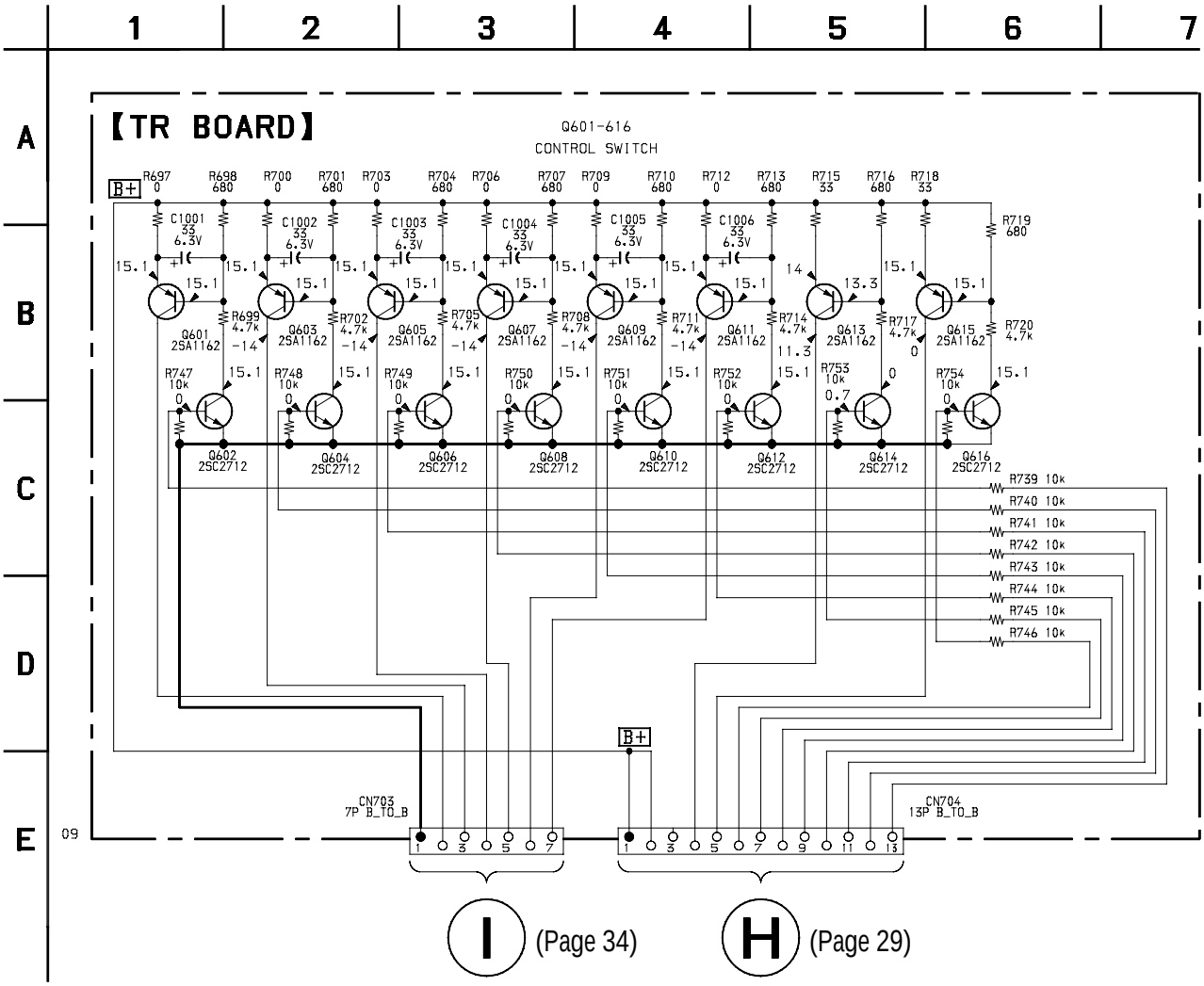


• **Indication of transistor**



These are omitted

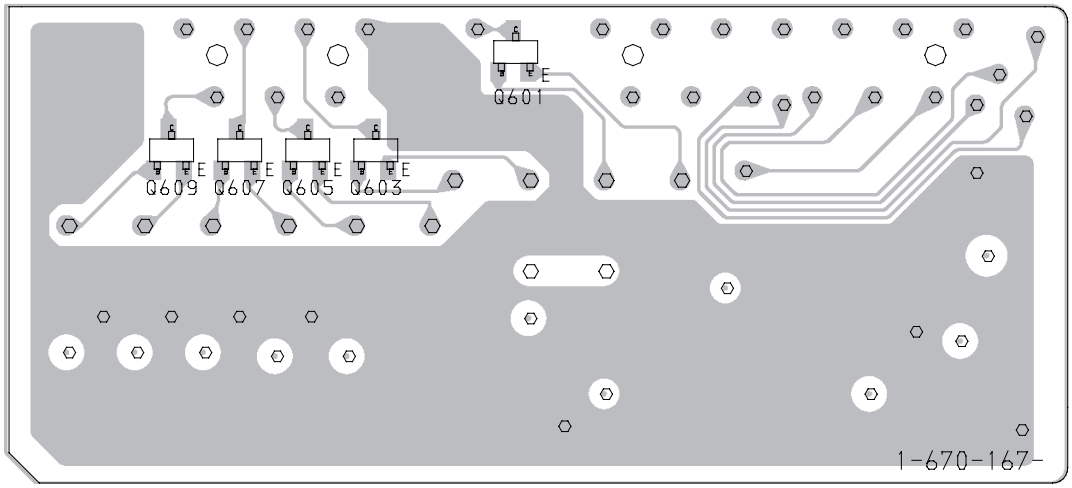
4-14. SCHEMATIC DIAGRAM – CONTROL SW SECTION –



4-15. PRINTED WIRING BOARD – CONTROL SW SECTION –

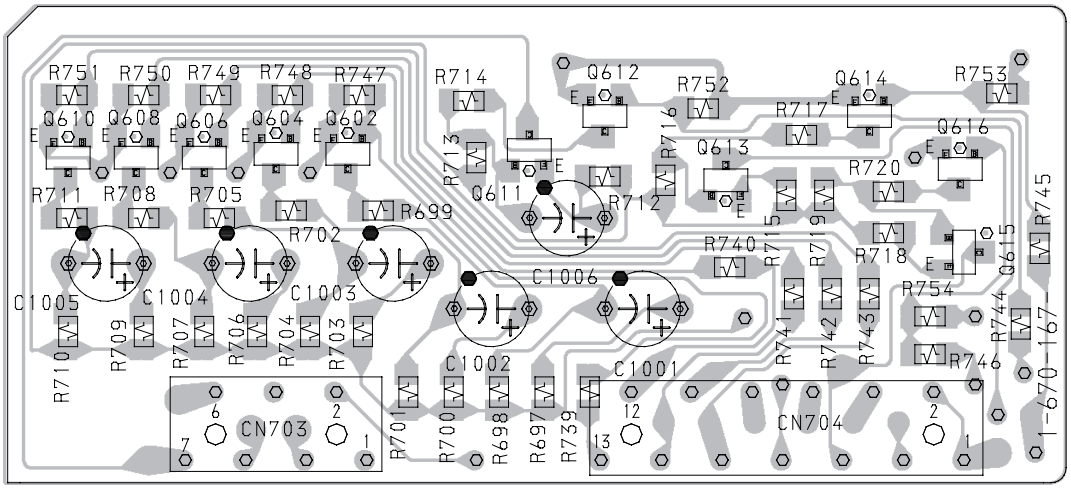
• See page 16 for Circuit Boards Location.

【TR BOARD】(SIDE A)



11
(12)

【TR BOARD】(SIDE B)

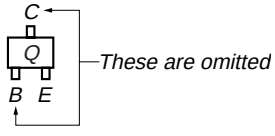


11
(12)

(Page 39)

(Page 39)

• Indication of transistor



4-16. IC PIN FUNCTIONS

• IC201 System Controller (HD64F3337YFLH16MAIN1)

Pin No.	Pin Name	I/O	Function
1	RESET	I	Reset input (Reset at “L”)
2	XTAL	O	Crystal oscillation output (16 MHz)
3	EXTAL	I	Crystal oscillation input (16 MHz)
4	MD1	I	Normally connected to +5V
5	MD0	I	Normally connected to +5V
6	NMI	I	Normally connected to +5V
7	STBY/FVPP	I	Normally connected to +5V
8	VCC	–	+5V power supply
9	FL-CLK	O	Clock output to FL driver
10	FL-LAT	O	Latch output to FL driver
11	FL-DAT	O	Data output to FL driver
12	GND	–	Ground
13	FL-CLR	O	Clear output to FL driver
14	(IN)	–	Not used
15	ROMCLK	O	Clock output to EEPROM
16	ROMDAT	I/O	Data input/output with to EEPROM
17	SIRCSI	I	Remote control signal input
18	DISPD0	I	Data input from selector
19	DISPD1	I	Data input from selector
20	DISPA2	O	Select signal output to selector
21	DISPA1	O	Select signal output to selector
22	DISPA0	O	Select signal output to selector
23	VOLUM +	O	Volume motor control (+) output
24	VOLUM –	O	Volume motor control (–) output
25	VOLLED	O	Volume LED output
26	M9MORQ	I	Data ready signal input from DSP56009
27	M9MOSS	O	Data request signal output to DSP56009
28	M9MOSI	O	Data output to DSP56009
29	AVCC	–	Analog system +5V power supply
30	AN0	I	Master VR position detection input
31	AN1	I	LFE signal detection input
32	AN2	I	Fixed at “L”
33	AN3	I	Fixed at “L”
34	AN4	I	Fixed at “L”
35	AN5	I	Fixed at “L”
36	AN6	I	Fixed at “L”
37	AN7	I	Fixed at “L”
38	AGND	–	Analog system ground
39	M9MRES	O	Reset output to DSP56009
40	M9MISO	I	Data input from DSP56009

Pin No.	Pin Name	I/O	Function
41	M9SCLK	O	Clock output to DSP56009
42	M4MORQ	I	Data ready signal input from SSP424023
43	M4MOSS	O	Data request signal output to SSP424023
44	M4MOSI	O	Data output to SSP424023
45	M4MRES	O	Reset output to SSP424023
46	M4MISO	I	Data input from SSP424023
47	VCC	–	+5V power supply
48	M4SCLK	O	Clock output to SSP424023
49	ADINIT	–	Not used
50	ANADIG	O	Analog digital switching, Digital at “H”
51	SRCINI	O	Initialize output to CXD8517Q
52	DF-DAT	O	Data output to CXD8505BQ
53	DF-CLK	O	Clock output to CXD8505BQ
54	DF-LAT	O	Latch output to CXD8505BQ
55	DF-INI	O	Initialize output to CXD8505BQ
56	GND	–	Ground
57	DA-LAT	O	Latch output to M62361FP
58	DA-CLK	O	Clock output to M62361FP
59	DA-DAT	O	Data output to M62361FP
60	RY-OFF	O	BYPASS relay output. Bypass at “L”
61	MUT	O	Mute relay output. Sounds are produced at “H”
62	LR +8DB	O	Front output gain +8 dB
63	LR +4DB	O	Front output gain +4 dB
64	SS +8DB	O	Rear output gain +8 dB
65	SS +4DB	O	Rear output gain +4 dB
66	CS +8DB	O	Center/sub-woofer output gain +8dB
67	CS +4DB	O	Center/sub-woofer output gain +4dB
68	DIRDAT	O	Data output to LC8905VD
69	DIWDAT	I	Data input from LC8905VD
70	DIRLAT	O	Latch output to LC8905VD
71	DIRCLK	O	Clock output to LC8905VD
72	DIRERR	I	PLL error signal input from LC8905VD
73	GND	–	Ground
74	DSELA1	O	Digital input selector output
75	DSELA0	O	Digital input selector output
76	RF-ERR	I	Error input from PD4606A
77	RF-RES	O	Reset output to PD4606A
78	TXD1	O	Serial data transmitter output
79	RXD1	I	Serial data receiver input
80	STOP	I	Power supply failure detection input

• IC301 Digital Audio Interface Receiver (LC8905VD)

Pin No.	Pin Name	I/O	Function
1	DIN1	I	Data input with built-in amplifier (Responding to the coaxial optical module)
2	DIN2	I	Data input (Responding to the optical module)
3	E/DOUT	O	Emphasis, input bi-phase, validity flag output
4	V_{DD}	–	Power supply (+5V)
5	R	I	VCO gain control input (Fixed at “H”)
6	VIN	I	VCO freerunning frequency setting input
7	VCO	O	LPF setting of PLL (Fixed at “H”)
8	GND	–	Ground
9	CKSEL	I	System clock select input (384fs, 512fs) (Connected to the power supply.)
10	XMODE	I	Reset input
11	AVOCK	I	Clock input for preventing PLL lock failure
12	TST1	I	Test input (Normally “L”)
13	TST2	I	
14	SCLK	I	Microcomputer IF clock input
15	XLAT	I	Microcomputer IF latch/chip enable input
16	SWDT	I	Microcomputer IF write data input
17	SRDT	O	Microcomputer IF read data output
18	DQSY	O	Microcomputer IF Sub-Q sync and ID sync output (Not used)
19	CKOUT	O	VCO clock output (Freerunning, 384fs, 512fs) (Not used)
20	FS128	O	128fs clock output
21	BCK	O	Bit clock output
22	LRCK	O	L/R clock output
23	DATAO	O	Audio data output
24	EROR	O	PLL lock error mute output

• IC401, 402, 403 Sampling Rate Converter (CXD8517Q)

Pin No.	Pin Name	I/O	Function
1	DATAI	I	Serial data input
2	LRCKI	I	Input serial data fs word clock input (Schemidt)
3	BCKI	I	Input serial data bit clock input
4	MI0	I	Input serial data format setting input 0 (Fixed at “L”)
5	MI1	I	Input serial data format setting input 1 (Fixed at “H”)
6	VDD	–	+5V power supply
7	FI128	I	Input data fs reference clock input (128fs)
8	MO0	I	Output data format setting input 0 (Fixed at “L”)
9	MO1	I	Output data format setting input 1 (Fixed at “H”)
10	INIT	I	Initializing input (Schmidt). “L” : Initializing, “H” : Normal operation
11	NC	–	Not used
12	GND	–	Ground
13	XI	I	Inverter input for oscillating the crystal oscillator (512fo master clock input)
14	XO	O	Inverter output for oscillating the crystal oscillator (Not used)
15	VDD	–	+5V power supply
16	XO2	O	Oscillation clock division output: 256fs (Not used)
17	GND	–	Ground
18	PASS	I	Input data through output mode setting input. “L” : Normal operation, “H” : Through (When through: Effective operation output only for deemphasis, attenuation) (Fixed at “L”)
19	FIS0	I	FI128 clock input division ratio setting input (Fixed at “L”)
20	FIS1	I	FI128 clock input division ratio setting input (Fixed at “L”)
21	TEST	–	Test input 0 (Not used)
22	NC	–	Not used
23	NC	–	
24	TEST1	I	Test input 1 (Fixed at “L”)
25	TEST2	I	Test input 2 (Fixed at “L”)
26	TEST3	I	Test input 3 (Fixed at “L”)
27	STA	O	fs conversion ratio measurement condition monitor output (Not used)
28	VDD	–	+5V power supply
29	NC	–	Not used
30	DATAO	O	Serial data output (fso output)
31	BCKO	I/O	Output serial data bit clock input/output
32	LRCKO	I/O	Output serial data fs word clock input/output
33	NC	–	Not used
34	NC	–	
35	MUTE	I	Data output mute setting input. “L” : Mute, “H” : Normal operation Synchronized with LRCK (“0” data only for DATAO output) (Fixed at “H”)
36	DEMP	I	Deemphasis setting input. “L” : OFF, “H” : ON (Fixed at “L”)
37	FS1	I	Deemphasis setting output fso frequency selection input 1 (Fixed at “L”)
38	FS2	I	Deemphasis setting output fso frequency selection input 2 (Fixed at “L”)
39	GND	–	Ground
40	XLAT	I	Attenuation, mode setting data latch pulse input (Fixed at “H”)
41	SCK	I	Attenuation, mode setting clock input (Fixed at “H”)
42	SWDT	I	Attenuation, mode setting data input (Fixed at “H”)
43	SLAVE	I	Sync mode selection. “L” : Slave, “H” : Master (Fixed at “L”)
44		–	Not used

• IC423 Digital Signal Processor (SSP424023FJ88)

Pin No.	Pin Name	I/O	Function
1	AGND	–	Address buffer ground
2	MCS0	O	Chip select 0 output to S-RAM (Not used)
3	MA15/MCS3	O	Chip select 3 output to S-RAM
4	MA14	O	Address data output to S-RAM
5	MA13	O	
6	AVCC	–	Address bus buffer power supply (+5V)
7	MA12	O	Address data output to S-RAM
8	AGND	–	Ground for address bus buffer
9	QVCC	–	Power supply for internal logic (+5V)
10	QGND	–	Ground for internal logic
11	MA11	O	Address data output to S-RAM
12	MA10	O	
13	MA9	O	
14	MA8	O	
15	AGND	–	Ground for address bus buffer
16	MA7	O	Address data output to S-RAM
17	AVCC	–	Power supply for address bus buffer (+5V)
18	MA6	O	Address data output to S-RAM
19	MA5	O	
20	MA4	O	
21	AGND	–	Ground for address bus buffer
22	MA3	O	Address data output to S-RAM
23	MA2	O	
24	MA1	O	
25	MA0	O	
26	SCK/SCL	I	SPI serial clock signal input from system controller
27	EXTAL	I	External frequency input (3 MHz)
28	QVCC	–	Power supply for internal logic (+5V)
29	QGND	–	Ground for internal logic
30	PINIT	I	PLL initialize input (Fixed at “L”)
31	PGND	–	Ground for PLL
32	PCAP	I	PLL filter input (Connected to 0.01 µF capacitor)
33	PVCC	–	Power supply for PLL (+5V)
34	SGND	–	Ground for serial port
35	MISO/SDA	I	Master data signal input from system controller
36	RESET	I	Reset signal input from system controller
37	MODA/IRQA	I	Mode select A (Fixed at “H”)
38	MODB/IRQB	I	Mode select B (Fixed at “L”)
39	MODC/NMI	I	Mode select C (Fixed at “H”)
40	SVCC	–	Power supply for serial port (+5V)

Pin No.	Pin Name	I/O	Function
41	MOSI/HA0	O	Master data signal output to system controller
42	SS/HA2	I	SPI slave select signal input from system controller
43	HREQ	I	Host request signal input from system controller
44	SGND	–	Ground for serial port
45	SDO2	O	Audio serial data 2 signal output
46	SDO1	O	Audio serial data 1 signal output
47	SDO0	O	Audio serial data 0 signal output
48	SVCC	–	Power supply for serial port (+5V)
49	SCKT	O	Serial clock transmission
50	WST	O	Word select transmission
51	SCKR	I	Serial clock reception
52	QGND	–	Ground for internal logic
53	QVCC	–	Power supply for internal logic (+5V)
54	SGND	–	Ground for serial port
55	WSR	I	Word select reception
56	SDI1	I	Audio serial data 1 signal input
57	SDI0	I	Audio serial data 0 signal input
58	DSO	O	Debug serial signal output (Not used)
59	DSI/OS0	I	Debug serial signal input (Not used)
60	DSCK/OS1	I	Debug serial clock signal input (Not used)
61	DR	I	Debug request input (Fixed at “H”)
62	MD7	I/O	Data input/output with S-RAM
63	MD6	I/O	
64	MD5	I/O	
65	MD4	I/O	
66	DGND	–	Ground for data bus buffer
67	MD3	I/O	Data input/output with S-RAM
68	MD2	I/O	
69	MD1	I/O	
70	DVCC	–	Power supply for data bus buffer (+5V)
71	MD0	I/O	Data input/output with S-RAM
72	DGND	–	Ground for data bus buffer
73	GPIO3	I/O	General DSP input/output (Not used)
74	GPIO2	I/O	
75	GPIO1	I/O	
76	GPIO0	I/O	General DSP input/output with system controller
77	MRD	O	Write strobe signal output to S-RAM
78	MWR	O	Read strobe signal output to S-RAM
79	MRAS/MA15/MCS1	O	Low address strobe signal output to S-RAM
80	MCAS/MA16/MCS2	O	Column address strobe signal output to S-RAM

• IC424 Digital Signal Processor (DSP56009FJ88F)

Pin No.	Pin Name	I/O	Function
1	AGND	–	Address buffer ground
2	MCS0	O	Chip select 0 output to S-RAM (Not used)
3	MCS3/MA15	O	Chip select 3 output to S-RAM (Not used)
4	MA14	O	Address data output to S-RAM (Not used)
5	MA13	O	
6	AVCC	–	Address bus buffer power supply (+5V)
7	MA12	O	Address data output to S-RAM(Not used)
8	AGND	–	Ground for address bus buffer
9	QVCC	–	Power supply for internal logic (+5V)
10	QGND	–	Ground for internal logic
11	MA11	O	Address data output to S-RAM (Not used)
12	MA10	O	
13	MA9	O	
14	MA8	O	
15	AGND	–	Ground for address bus buffer
16	MA7	O	Address data output to S-RAM (Not used)
17	AVCC	–	Power supply for address bus buffer (+5V)
18	MA6	O	Address data output to S-RAM (Not used)
19	MA5	O	
20	MA4	O	
21	AGND	–	Ground for address bus buffer
22	MA3	O	Address data output to S-RAM (Not used)
23	MA2	O	
24	MA1	O	
25	MA0	O	
26	SCK/SCL	I	SPI serial clock signal input from system controller
27	EXTAL	I	External frequency input
28	QVCC	–	Power supply for internal logic (+5V)
29	QGND	–	Ground for internal logic
30	PINIT	I	PLL initialize input (Fixed at “L”)
31	PGND	–	Ground for PLL
32	PCAP	I	PLL filter input (Connected to 0.01 µF capacitor)
33	PVCC	–	Power supply for PLL (+5V)
34	SGND	–	Ground for serial port
35	MISO/SDA	I	Master data signal input from system controller
36	RESET	I	Reset signal input from system controller
37	MODA/IRQA	I	Mode select A (Fixed at “H”)
38	MODB/IRQB	I	Mode select B (Fixed at “L”)
39	MODC/NMI	I	Mode select C (Fixed at “H”)
40	SVCC	–	Power supply for serial port (+5V)

Pin No.	Pin Name	I/O	Function
41	MOSI/HA0	O	Master data signal output to system controller
42	SS/HA2	I	SPI slave select signal input from system controller
43	HREQ	I	Host request signal input from system controller
44	SGND	–	Ground for serial port
45	SDO2	O	Audio serial data 2 signal output (Not used)
46	SDO1	O	Audio serial data 1 signal output
47	SDO0	O	Audio serial data 0 signal output
48	SVCC	–	Power supply for serial port (+5V)
49	SCKT	O	Serial clock transmission
50	WST	O	Word select transmission
51	SCKR	I	Serial clock reception
52	QGND	–	Ground for internal logic
53	QVCC	–	Power supply for internal logic (+5V)
54	SGND	–	Ground for serial port
55	WSR	I	Word select reception
56	SDI1	I	Audio serial data 1 signal input
57	SDI0	I	Audio serial data 0 signal input (Not used)
58	DSO	O	Debug serial signal output (Not used)
59	DSI/OS0	I	Debug serial signal input (Not used)
60	DSCK/OS1	I	Debug serial clock signal input (Not used)
61	DR	I	Debug request input (Fixed at “H”)
62	MD7	I/O	Data input/output with S-RAM (Not used)
63	MD6	I/O	
64	MD5	I/O	
65	MD4	I/O	
66	DGND	–	Ground for data bus buffer
67	MD3	I/O	Data input/output with S-RAM (Not used)
68	MD2	I/O	
69	MD1	I/O	
70	DVCC	–	Power supply for data bus buffer (+5V)
71	MD0	I/O	Data input/output with S-RAM (Not used)
72	DGND	–	Ground for data bus buffer
73	GPIO3	I/O	General DSP input/output (Not used)
74	GPIO2	I/O	
75	GPIO1	I/O	
76	GPIO0	I/O	General DSP input/output
77	MRD	O	Write strobe signal output to S-RAM (Not used)
78	MWR	O	Read strobe signal output to S-RAM (Not used)
79	MA15/MCS1/MRAS	O	Low address strobe signal output to S-RAM (Not used)
80	MA16/MCS2/MCAS	O	Column address strobe signal output to S-RAM (Not used)

• IC901 Digital Signal Processor (AC-3 RF Demodulator) (PD4606A)

Pin No.	Pin Name	I/O	Function
1	GND	–	Ground
2	VDD	–	Power supply (+5V)
3	XOUT	O	Crystal oscillation circuit output (Not used)
4	XIN	I	Crystal oscillation circuit input (46.08 MHz)
5	TM0	I	For IC test mode setting (Fixed at “L”)
6	TM1	I	
7	TM2	I	
8	RESET	I	System reset. Reset at “L”. Set to “ L” when power is turned ON
9	DATA	I	Serial data input from CPU (LSB first) (Fixed at “H”)
10	MCK	I	CPU serial input clock Latches data at rising edge of clock (Fixed at “H”)
11	MLTR	I	CPU input latch Latches serial data (8 bits) from CPU at register (Fixed at “H”)
12	TM3	I	For IC test mode setting (Fixed at “L”)
13	TM4	I	
14	TLDB	I	Tag code load signal Tag code is loaded in 16-bit shift register at “L” (Fixed at “H”)
15	TCK	I	Tag code output clock Data is output at rising edge of clock (Fixed at “H”)
16	TDO	O	Tag code serial data signal. (MSB first) (Not used)
17	TRP	O	Tag code renewal signal. “H” when no error in tag code when error correction operation of one block ends (Not used)
18	TM5	I	For IC test mode setting (Fixed at “L”)
19	TSTIN1	I	For testing IC (Fixed at “L”)
20	TSTIN2	I	
21	A0	O	Address output to external RAM. Address 0 (LSB)
22	A1	O	Address output to external RAM. Address 1
23	A2	O	Address output to external RAM. Address 2
24	A3	O	Address output to external RAM. Address 3
25	VDD	–	Power supply (+5V)
26	A4	O	Address output to external RAM. Address 4
27	A5	O	Address output to external RAM. Address 5
28	GND	–	Ground
29	VDD	–	Power supply (+5V)
30	A6	O	Address output to external RAM. Address 6
31	A7	O	Address output to external RAM. Address 7
32	GND	–	Ground
33	A12	O	Address output to external RAM. Address 12
34	A14	O	Address output to external RAM. Address 14 (MSB)
35	WE	O	Write enable signal to external RAM. Active at “L”

Pin No.	Pin Name	I/O	Function
36	A13	O	Address output to external RAM. Address 13
37	A8	O	Address output to external RAM. Address 8
38	A9	O	Address output to external RAM. Address 9
39	A11	O	Address output to external RAM. Address 11
40	GND	–	Ground
41	OE	O	Output enable signal to external RAM. Active at “L”
42	A10	O	Address output to external RAM. Address 10
43	DB8	I/O	Data terminal with external RAM. For erasure pointer
44	DB7	I/O	Data terminal with external RAM. Data bus 7
45	DB6	I/O	Data terminal with external RAM. Data bus 6
46	DB5	I/O	Data terminal with external RAM. Data bus 5
47	DB4	I/O	Data terminal with external RAM. Data bus 4
48	DB3	I/O	Data terminal with external RAM. Data bus 3
49	DB2	I/O	Data terminal with external RAM. Data bus 2
50	DB1	I/O	Data terminal with external RAM. Data bus 1
51	DB0	I/O	Data terminal with external RAM. Data bus 0
52	VDD	–	Power supply (+5V)
53	GND	–	Ground
54	VO	O	VCXO output (Not used)
55	VI	I	VCXO input
56	TSTIN3	I	For testing IC (Fixed at “L”)
57	PDO	O	Phase comparator output (3-state)
58	MSYC	O	“H” when AC-3 sync signal. For monitor (Not used)
59	MUTO	O	Muting output. Muting at “H” “H” when “MUTI=H” or not synchronized with AC-3
60	VLDY	O	Parity flag output. Data is correct when “L”. Data may be incorrect if “H” (Not used)
61	LRCK	O	L/Rch switching clock. 48 kHz. Lch when “H” (Not used)
62	BCK	O	Bit clock. 3.072 MHz (Not used)
63	SDO	O	Serial data output (Not used)
64	DASYO	O	Digital out preamble B identification signal (Not used)
65	DAOUT	O	Digital output
66	DAIN	I	Digital audio interface signal input Select a digital output processed inside IC by internal register setting or signal from “DAIN” and output to “DAOUT” (Not used)
67	TSTIN4	I	For testing IC (Not used)
68	TSTIN5	I	
69	C2F1	O	C2 error correction state display. Outputs if corrected properly (Not used)
70	C2F0	O	C2 error correction state display. Outputs number of errors at C2 (Fixed at “H”)
71	C1F1	O	C1 error correction state display. Outputs whether error is present at C1 (Fixed at “H”)
72	C1F0	O	C1 error correction state display. Outputs number of errors at C1 (Fixed at “H”)
73	DRY	O	For monitoring error correction (Not used)
74	DEN	O	
75	ECCK	O	Error correction sector clock. 576 kHz (Not used)

Pin No.	Pin Name	I/O	Function
76	TSTIN6	I	For testing IC (Fixed at “L”)
77	TSTIN7	I	
78	MUTI	I	Muting input. Muted at “H”
79	VDD	–	Power supply (+5V)
80	GND	–	Ground
81	DOUT	O	QPSK inverted output (Not used)
82	DIN	I	QPSK signal input
83	XSEL	I	Crystal select. Used at “H” (Fixed at “H”)
84	PSEL	I	PLL select. Used at “L” (Fixed at “L”)
85	EPCK	O	QPSK eye pattern clock. (Not used)
86	EYE1	O	Eye pattern output. I phase (Not used)
87	EYE0	O	Eye pattern output. Q phase (Not used)
88	BTR	O	Not used
89	ELB	O	
90	C9M	O	9.216 MHz (Not used)
91	TSTIN8	I	For testing IC (Not used)
92	GND	–	Ground
93	IDST	O	Signal indicating ID start position (Not used)
94	IDCK	O	ID signal sample clock Data changes at falling edge of clock. (Not used)
95	IDO	O	ID data output (MSB first) (Not used)
96	WINGT	O	“L” while searching for sync signal of correction block (Not used)
97	SYST0	O	Displays lock state of sync signal of correction block (Not used)
98	SYST1	O	
99	ADST0	O	Displays continuous state of ID address of correction block (Not used)
100	ADST1	O	

• **IC1001 System Controller (HD64F3337YFLH16MPEG1)**

Pin No.	Pin Name	I/O	Function
1	RES	I	Reset input (Reset at “L”)
2	XTAL	O	Crystal oscillation output (16 MHz)
3	EXTAL	I	Crystal oscillation input (16 MHz)
4	MD1	I	Mode select input
5	MD0	I	Normally connected to +5V
6	NMI	I	Normally connected to +5V
7	STBY/FVPP	I	Standby/FVPP input
8	VCC	–	+5V power supply
9	P52/SCKO	–	(Not used)
10	P51/RXD0	O	Serial data receiver output
11	P50/TXD0	I	Serial data transmitter input
12	GND	–	Ground
13	P97/WAIT	–	Not used
14	P96/16MHz	O	16MHz clock output
15	P95/AS	–	Not used
16	P94/WR	–	
17	P93/RD	–	
18	P92/IRQ0	–	
19	P91/IRQ1	–	
20	P90/IRQ2/ADTRG	–	
21	P60	I/O	Host data bus input/output
22	P61	I/O	
23	P62	I/O	
24	P63	I/O	
25	P64	I/O	
26	P65	I/O	
27	P66	I/O	
28	P67	I/O	
29	AVCC	–	Analog system +5V power supply
30	P70/AN0	I	Fixed at “L”
31	P71/AN1	I	
32	P72/AN2	I	
33	P73/AN3	I	
34	P74/AN4	I	
35	P75/AN5	I	
36	P76/AN6	I	
37	P77/AN7	I	
38	AGND	–	Analog system ground
39	P40	I	Host request input from DSP56002
40	P41	O	Host read/write output to DSP56002

Pin No.	Pin Name	I/O	Function
41	P42	O	Host enable output to DSP56002
42	P43	O	Host address data output to DSP56002
43	P44	O	
44	P45	O	
45	P46	I	Phase and frequency locked input from DSP56002
46	P47	O	Digital signal processor reset output to DSP56002
47	VCC	–	+5V power supply
48	P27/A15	O	Not used
49	P26/A14	O	
50	P25/A13	O	
51	P24/A12	O	
52	P23/A11	O	
53	P22/A10	O	
54	P21/A9	O	
55	P20/A8	O	Decoder select output
56	GND	–	Ground
57	P17/A7	O	Not used
58	P16/A6	O	
59	P15/A5	O	
60	P14/A4	O	
61	P13	O	
62	P12/A2	O	
63	P11/A1	O	
64	P10/A0	O	
65	P30/D0	O	
66	P31/D1	O	
67	P32/D2	O	
68	P33/D3	O	
69	P34/D4	I	
70	P35/D5	O	
71	P36/D6	O	
72	P37/D7	I	
73	GND	–	Ground
74	P80	O	Not used
75	P81	O	
76	P82	I	
77	P83	O	
78	P84/TXD1	O	Serial data transmitter output for flash writer
79	P85/TXD1	I	Serial data receiver input for flash writer
80	P86/SCK1	I	Not used

• **IC1002 Digital Signal Processor (DSP56002FC66)**

Pin No.	Pin Name	I/O	Function
1	EXTAL	I	External clock crystal input
2	VCCQ	–	Power supply for interrupt/mode control
3	GNDQ	–	Ground for interrupt/mode control
4	HA2/PB10	I	Host address data input
5	GNDH	–	Ground for Host
6	HA1/PB9	I	Host address data input
7	HA0/PB8	I	
8	HACK/PB14	I	Host Acknowledge input
9	VCCH	–	Power supply for Host block
10	HEN/PB12	I	Host enable input
11	GNDH	–	Ground for Host block
12	HR/W/PB11	I	Host read/write input
13	HREQ/PB13	O	Host request output
14	H7/PB7	I/O	Host data bus input/output
15	H6/PB6	I/O	
16	GNDH	–	Ground for Host block
17	H5/PB5	I/O	Host data bus input/output
18	H4/PB4	I/O	
19	H3/PB3	I/O	
20	VCCH	–	Power supply for Host block
21	H2/PB2	I/O	Host data bus input/output
22	GNDH	–	Ground for Host block
23	H1/PB1	I/O	Host data bus input/output
24	H0/PB0	I/O	
25	RXD/PC0	I	Receive data input
26	TXD/PC1	O	Transmit data output
27	GNDS	–	Ground for SCI and SSI block
28	SCLK/PC2	I/O	SCI serial clock input/output
29	SC0/PC3	I/O	Serial clock zero input/output
30	VCCS	–	Power supply for SCI and SSI block
31	SCK/PC6	I/O	SSI serial clock input/output
32	SC2/PC5	I/O	Serial control 1 input/output
33	STD/PC8	O	SSI transmit data output
34	GNDS	–	Ground for SCI and SSI block
35	SC1/PC4	I/O	Serial control 2 input/output
36	GNDQ	–	Ground for interrupt/mode control
37	VCCQ	–	Power supply for interrupt/mode control
38	SRD/PC7	I	SSI receive data input
39	TIO	I/O	Timer/event counter module input/output
40	NC	–	Not used
41	BN	O	Bus needed (Not used)
42	WT	I	Bus wait input (Fixed at “H”)
43	BG	O	Bus grant output (Not used)
44	BR	I	Bus request input (Fixed at “H”)
45	VCCC	–	Power supply for bus control

• Abbreviation
SCI : Serial Communication Interface
SSI : Synchronous Serial Interface

Pin No.	Pin Name	I/O	Function
46	WR	O	Write enable output
47	RD	O	Read enable output
48	GNDC	–	Ground for bus control
49	NC	–	Not used
50	DSCK/OS1	I/O	Debug serial clock/Chip status 1 input/output
51	DR	I	Debug request input
52	DSO	O	Debug serial output
53	DSI/OS0	I/O	Debug serial input/Chip status 0 input/output
54	BS	O	Bus strobe output (Not used)
55	X/Y	O	X/Y select output
56	GNDN	–	Ground for address bus
57	DS	O	Data memory select output
58	VCCN	–	Power supply for address bus
59	PS	O	Program memory select output
60	A0	O	Adress data output to S-RAM
61	A1	O	
62	GNDN	–	Ground for address bus
63	A2	O	Adress data output to S-RAM
64	A3	O	
65	A4	O	
66	VCCQ	–	Power supply for interrupt/mode control
67	GNDQ	–	Ground for interrupt/mode control
68	A5	O	Adress data output to S-RAM
69	VCCN	–	Power supply for address bus
70	GNDN	–	Ground for address bus
71	A6	O	Adress data output to S-RAM
72	A7	O	
73	A8	O	
74	A9	O	
75	GNDN	–	Ground for address bus
76	A10	O	Adress data output to S-RAM
77	A11	O	
78	A12	O	
79	VCCN	–	Power supply for address bus
80	A13	O	Adress data output to S-RAM
81	GNDN	–	Ground for address bus
82	A14	O	Not used
83	A15	O	
84	D0	I/O	Data input/output to S-RAM
85	D1	I/O	
86	GNDD	–	Ground for data bus
87	D2	I/O	Data input/output to S-RAM
88	D3	I/O	
89	VCCD	–	Power supply for data bus
90	D4	I/O	Data input/output to S-RAM
91	D5	I/O	

Pin No.	Pin Name	I/O	Function
92	GNDD	–	Power supply for data bus
93	D6	I/O	Data input/output to S-RAM
94	D7	I/O	
95	D8	I/O	
96	D9	I/O	
97	VDDQ	–	Power supply for interrupt/mode control
98	GNDQ	–	Ground for interrupt/mode control
99	GNDD	–	Ground for data bus
100	D10	I/O	Data input/output to S-RAM
101	D11	I/O	
102	VCCD	–	Power supply for data bus
103	D12	I/O	Data input/output to S-RAM
104	D13	I/O	
105	GNDD	–	Ground for data bus
106	D14	I/O	Data input/output to S-RAM
107	D15	I/O	
108	D16	I/O	
109	D17	I/O	
110	GNDD	–	Ground for data bus
111	D18	I/O	Data input/output to S-RAM
112	D19	I/O	
113	VCCD	–	Power supply for data bus
114	D20	I/O	Data input/output to S-RAM
115	D21	I/O	
116	GNDD	–	Ground for data bus
117	D22	I/O	Data input/output to S-RAM
118	D23	I/O	
119	MODC/NMI	I	Mode select C/Non-maskable interrupt request input
120	MODB/IRQB	I	Mode select B/External interrupt request input
121	MODA/IRQA	I	Mode select A/External interrupt request/stop recovery input
122	GNDCK	–	Ground for clock
123	CKOUT	O	Output clock output (Not used)
124	VCCCK	–	Power supply for clock
125	RESET	I	Rest input
126	CKP	I	Output clock polarity control input
127	VCCP	–	Power supply for analog PLL
128	PCAP	I	PLL filter capacitor input
129	GNDP	–	Ground for analog PLL
130	PLOCK	O	Phase and frequeny locked output
131	PINIT	I	PLL initialization input (Fixd at “L”)
132	XTAL	O	Crystal output (Not used)

• Abbreviation
PLL : Phase Locked Loop

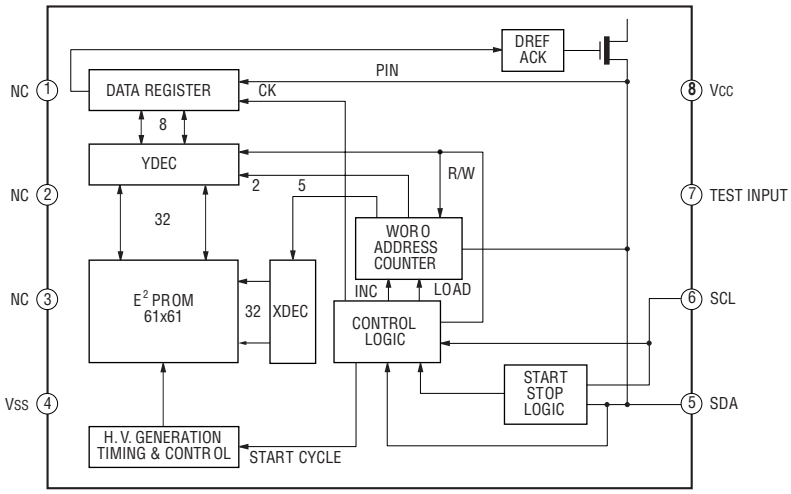
• **IC1006 Serial Communication Format Converter (CXD8751Q)**

Pin No.	Pin Name	I/O	Function
1	LAC3	I	Decoder select input H: MPEG decode/L: AC-3 decode
2	—	–	Not used
3	WSR	O	LR clock output for DSP56009 (MPEG: 4 Fs/AC-3: 1 Fs) H: L channel
4	GPIO0	O	Frame sync pulse output (1 Fs) for write data to DSP56009
5	—	–	Not used
6	VCC	–	+5V power supply
7	—	–	Not used
8	SCKR	O	Clock output for data write to DSP56009 (MPEG: 256 Fs/AC-3: 64 Fs)
9	SDI0	O	Write data (DSP56009) output
10	DI2	I	Fix at “L”
11	DI3	I	
12	DIN	I	Data input to DSP56002
13	BCKI	I	Bit clock input for Data input from DSP56002
14	LRCK	I	L/R ch switching clock input for Data input from DSP56002
15	DCK	I	Master clock delay input
16	MCK	I	Master clock input
17	GND	—	Ground
18	BCKO	O	64 Fs clock output (Not used)
19	LRCKO	O	1 Fs clock output (Not used)
20	RLRCK	O	1 Fs clock output (Not used)
21	LRPH	I	L/R ch clock phase control input (Fix at “L”)
22	MCPH	I	256 Fs master clock phase control input (Fix at “L”)
23	—	–	Not used
24	HALM	I	Digital signal processor select mode input (Fix at “L”)
25	DO1	O	Not used
26	SRD	O	Write data (DSP56002) 1 bit delay output (L: DI2, H: DIN)
27	—	–	Not used
28	VCC	–	+5V power supply
29	—	–	Not used
30	SC1	O	Frame sync pulse output for write data to DSP56002
31	DO4	O	Not used
32	HDO4	I	Fixed at “L”
33	HDI1	I	Digital signal processor data input select input (L: DI2, H: DIN)
34	H2X1	I	Fixed at “L”
35	HIIS	I	L/R ch clock timing select (Fixed at “L”)
36	STD	I	Read data (DSP56002) input
37	SC2	O	Word sync pulse output (8 Fs) for read data to DSP56002
38	SCK	O	Clock output (256 Fs) for read data to DSP56002
39	GND	–	Ground
40	DTI	I	Fixed at “L”
41	SC0	O	Bit clock output for write data to DSP5602
42	TXD	O	Frame sync pulse output (1 Fs) for read data to DSP56002
43	RXD	O	L/R ch clock output for wirte data to DSP56002
44	—	–	Not used

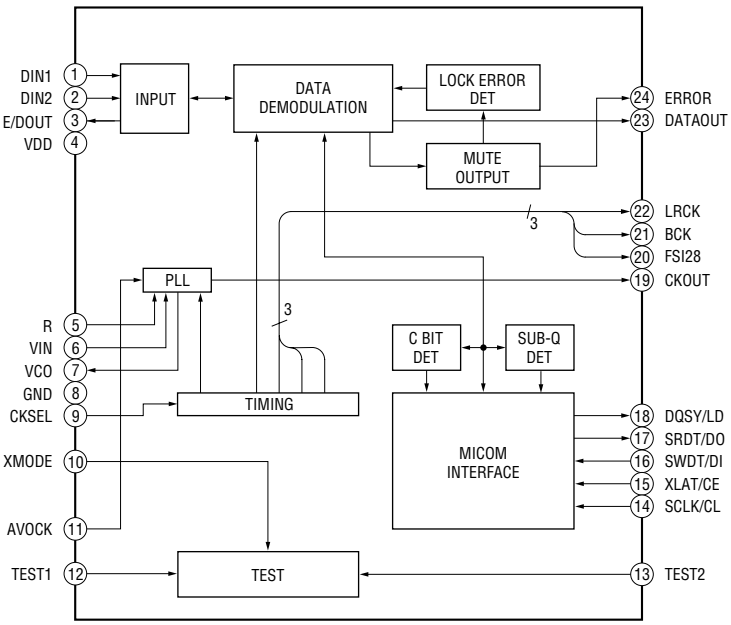
4-17. IC BLOCK DIAGRAMS

• Main section

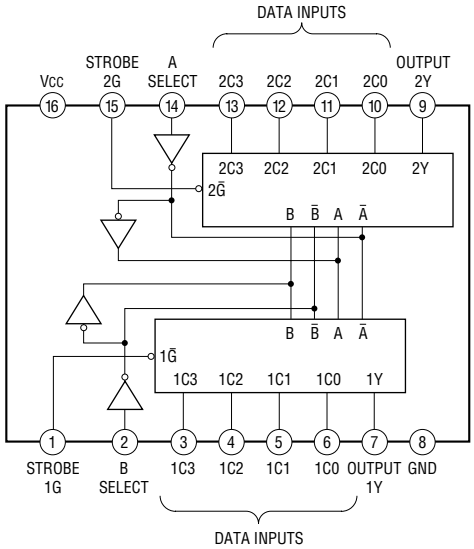
IC202 AT24C02N-10SC



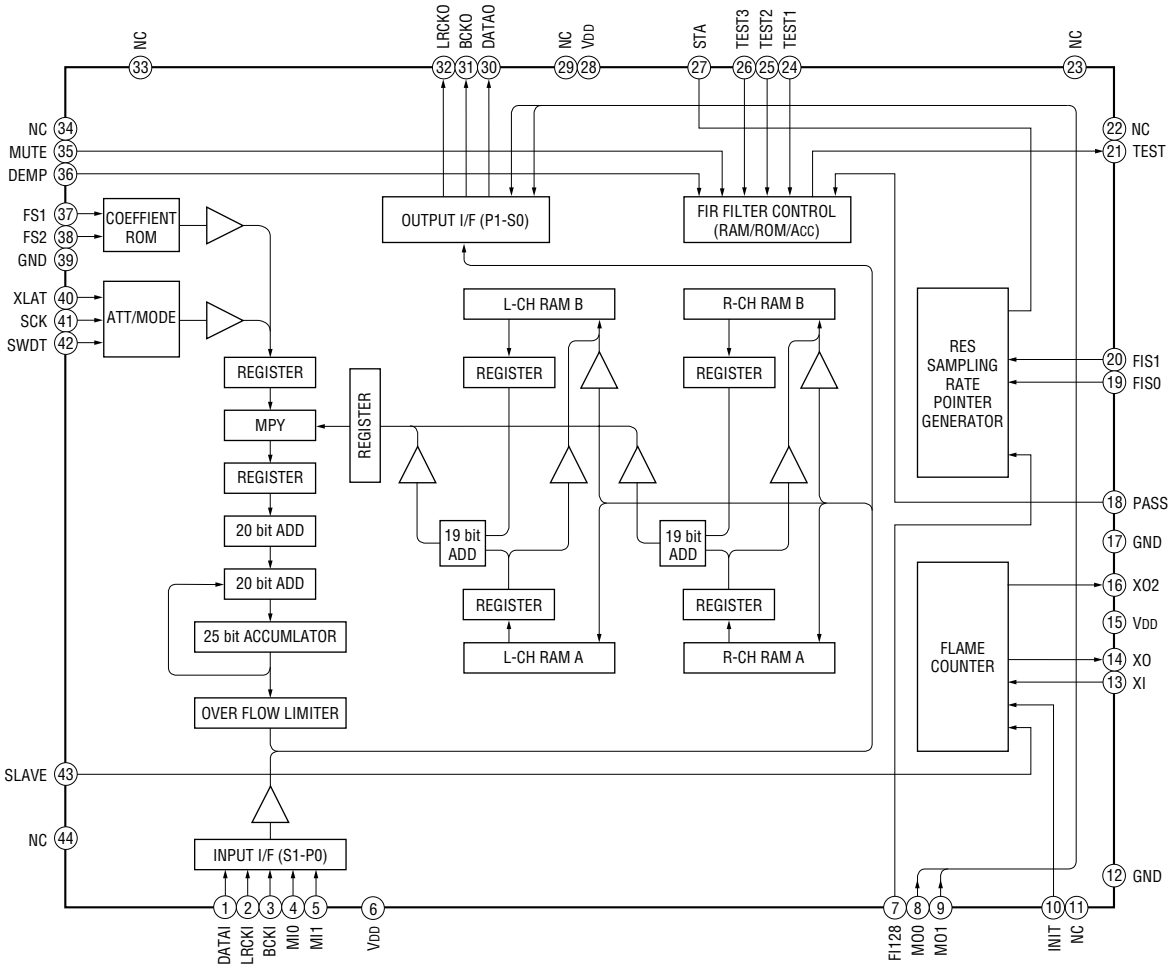
IC301 LC8905VD



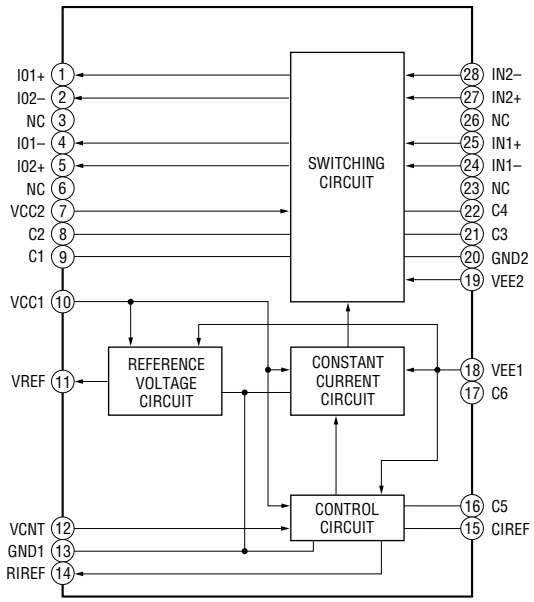
IC302 TC74HC153AF



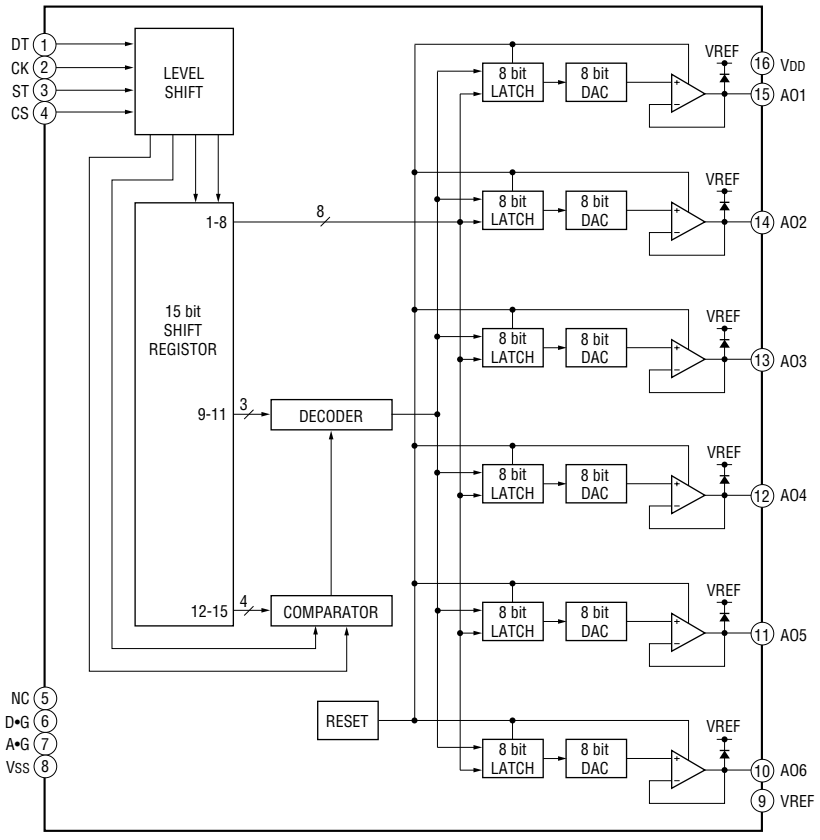
IC401, 402, 403 CXD8517Q



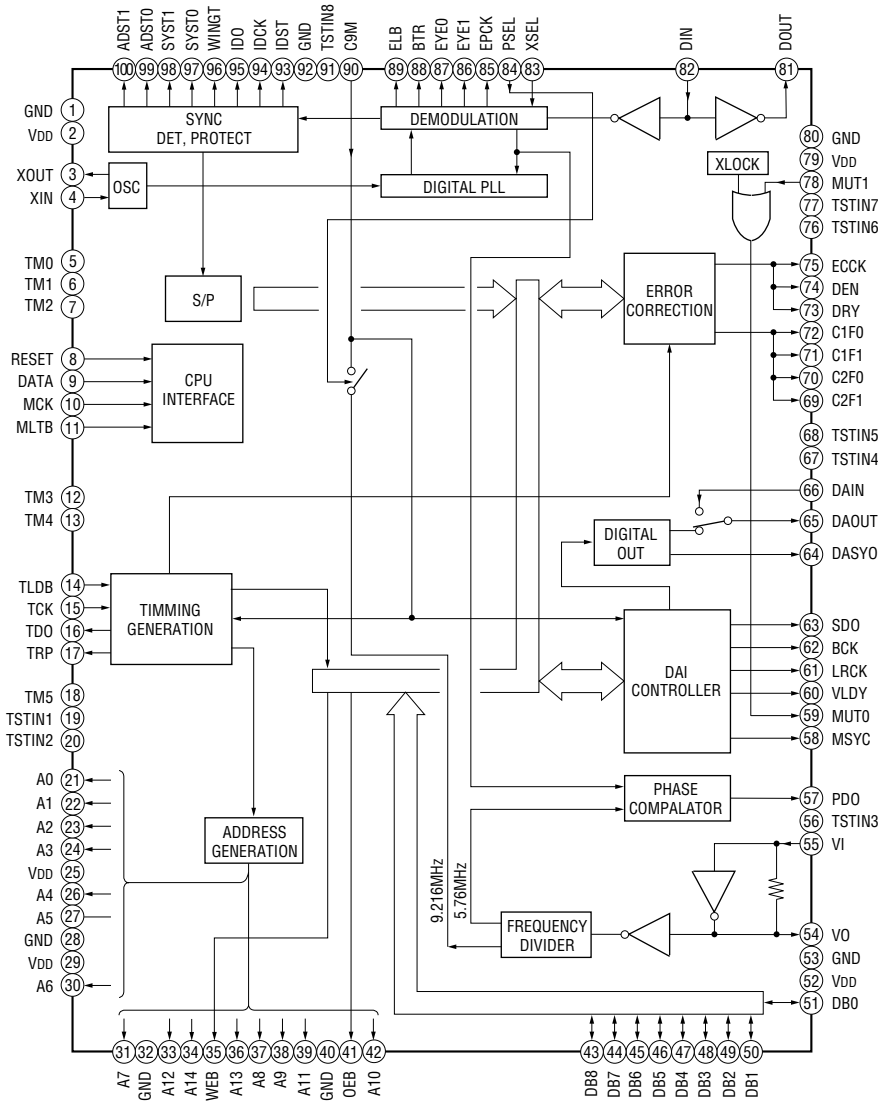
IC409-414 CXA8042AS



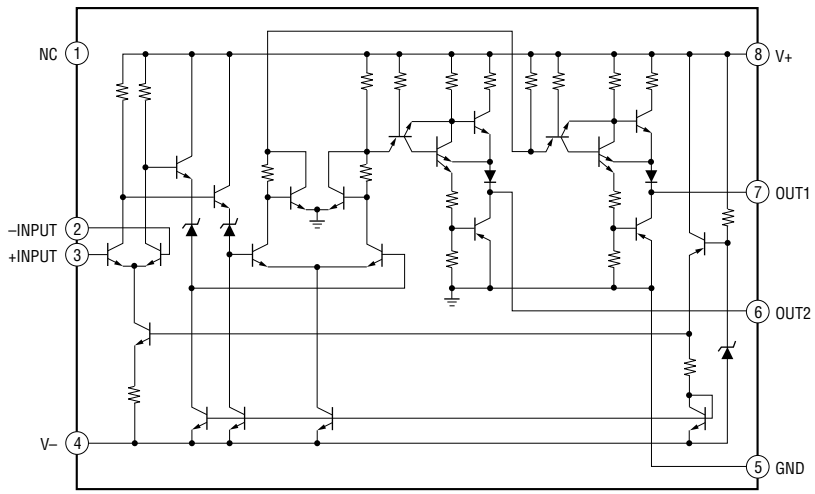
IC421 M62361FP



IC901 PD4606A

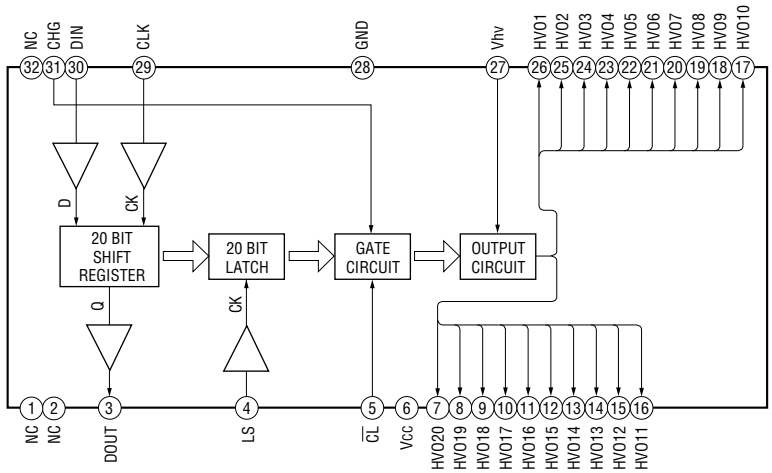


IC903 NJM360M

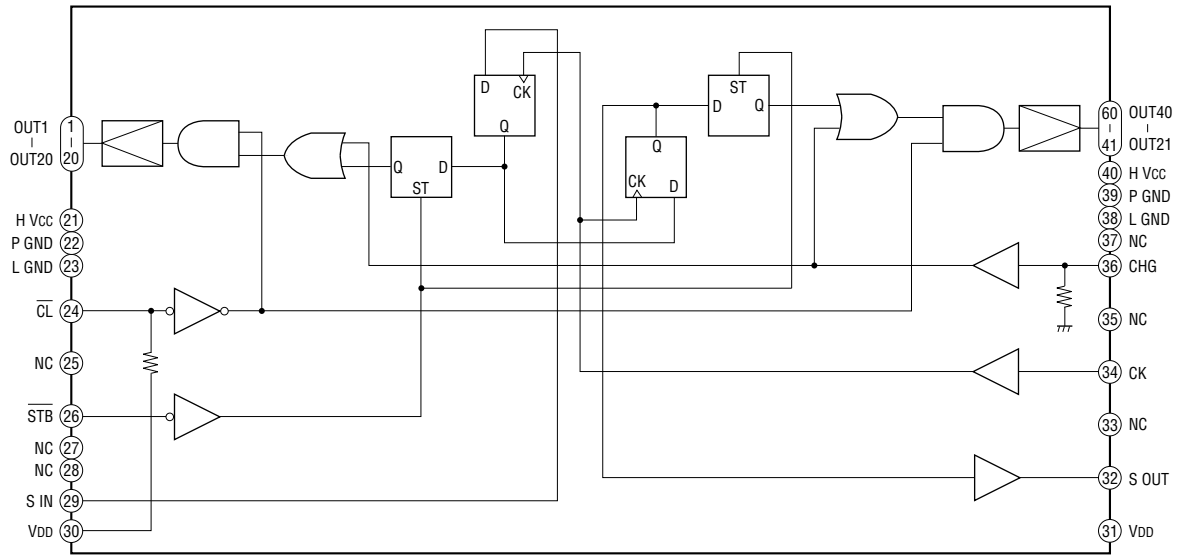


• **Display section**

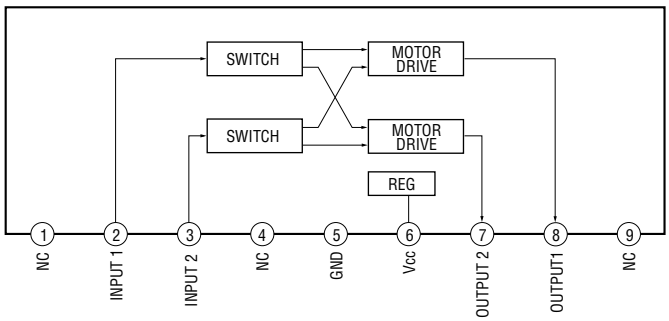
IC251 MSC1164GS-K



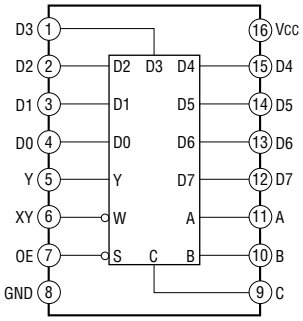
IC252 TD62C950RF



IC253 BA6208



IC254, 255 TC74HC151AP

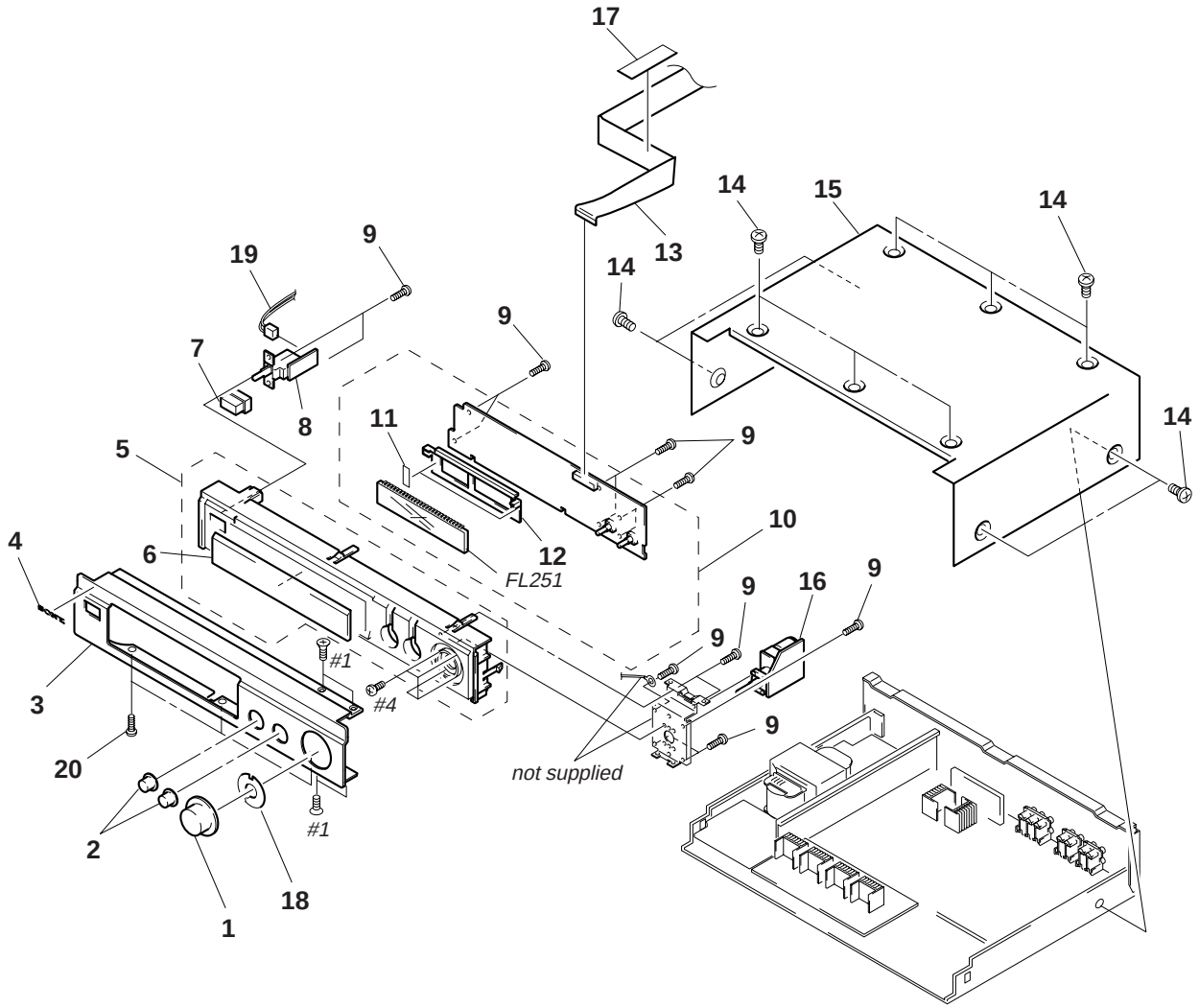


SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE)
  ↑
  Cabinets color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

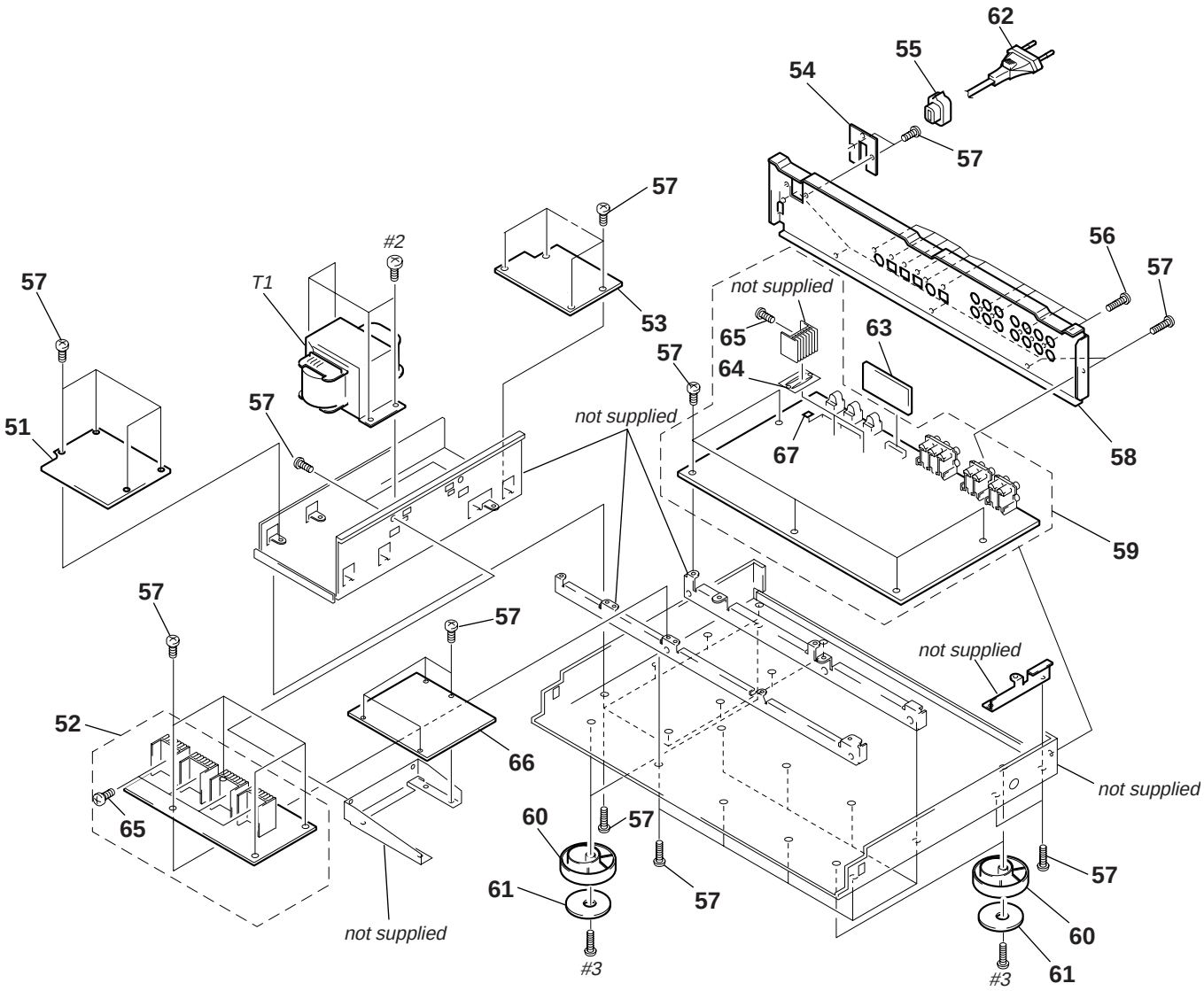
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CASE AND FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	X-4947-140-1	KNOB (R48V) ASSY (BLACK)	
1	X-4947-140-4	KNOB (R48V) ASSY (GOLD)	
2	4-987-860-02	KNOB (19)(BLACK)	
2	4-987-860-12	KNOB (19)(GOLD)	
3	4-987-858-31	PANEL, FRONT (BLACK) (SDP-EP90ES)	
3	4-987-858-41	PANEL, FRONT (GOLD) (SDP-EP90ES)	
3	4-987-858-52	PANEL, FRONT (SDP-EP70)	
4	4-942-568-41	EMBLEM (NO.5), SONY (BLACK)	
4	4-942-568-51	EMBLEM (NO.5), SONY (GOLD)	
5	X-4949-654-1	BASE ASSY (G), PANEL (GOLD)	
5	X-4949-713-1	BASE ASSY (B), PANEL (BLACK)	
6	4-987-859-02	WINDOW, INDICATION	
7	4-900-297-01	BUTTON (POWER)(BLACK)	
7	4-900-297-11	BUTTON (POWER)(GOLD)	
* 8	1-664-279-11	SW BOARD	
9	4-974-510-01	SCREW (+BV 3X8 B)	
* 10	A-4392-303-A	DISPLAY BOARD, COMPLETE	
* 11	4-921-941-71	CUSHION (FL)	
* 12	4-987-862-01	HOLDER (FL TUBE)	
13	1-773-232-11	WIRE (FLAT TYPE) (25 CORE)	
14	3-704-366-01	SCREW (CASE)(M3X8)(BLACK)	
14	3-704-366-71	SCREW (CASE)(GOLD)	
* 15	4-974-321-81	CASE (BLACK)	
* 15	4-974-321-91	CASE (GOLD)	
* 16	1-664-280-11	VOL BOARD	
17	4-961-535-01	SPACER (COVER)	
* 18	4-990-677-01	COVER (GOLD)(SDP-EP90ES)	
19	1-769-078-51	LEAD (WITH CONNECTOR) (2 CORE)	
20	3-704-515-21	SCREW (BV/RING)	
FL251	1-517-645-11	INDICATOR TUBE, FLUORESCENT	

5-2. CHASSIS SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	1-664-278-11	AC 2 BOARD	
* 52	A-4542-493-A	PS BOARD, COMPLETE	
* 53	1-664-277-11	AC 1 BOARD	
* 54	4-923-873-01	BRACKET, CORD STOPPER	
55	3-703-244-00	BUSHING (2104), CORD	
56	3-704-515-41	SCREW (BV/RING)	
57	4-974-510-01	SCREW (+BV 3X8 B)	
* 58	4-987-861-51	PANEL, BACK (SDP-EP90ES)	
* 58	4-987-861-61	PANEL, BACK (SDP-EP70)	
* 59	A-4542-494-A	MAIN BOARD, COMPLETE	
60	4-970-123-01	FOOT (F50180S)	
61	4-970-124-01	CUSHION (F50180S)	
⚠62	1-776-095-11	CORD, POWER	
* 63	A-4414-377-A	TR BOARD, COMPLETE	
64	4-989-736-01	SPACER	
65	2-259-121-01	SCREW, TR	
* 66	A-4542-496-A	DECODER BOARD, COMPLETE	
67	3-831-441-99	CUSHION	
⚠T1	1-431-190-11	TRANSFORMER, POWER	

AC-1 **AC-2**

DECODER

SECTION 6
ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: µ , for example:
  uA...: µ A..., uPA...: µ PA..., uPB...: µ PB..., uPC...: µ PC..., uPD...: µ PD...
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H

Ref. No.	Part No.	Description			Remark
*	1-664-277-11	AC 1 BOARD			
		**********			
		< CAPACITOR >			
⚠C1	1-115-383-11	CERAMIC	0.001uF	10%	125V
		< CONNECTOR >			
CN1	1-564-321-00	PIN, CONNECTOR 2P			
* CN2	1-565-792-11	PIN, CONNECTOR 2P			
CN3	1-564-321-00	PIN, CONNECTOR 2P			
		< FUSE >			
⚠F1	1-532-389-51	FUSE, TIME-LAG (500mA/250V)			
		< FUSE HOLDER >			
FH1	1-533-293-11	FUSE HOLDER			
FH3	1-533-293-11	FUSE HOLDER			
		< COIL >			
⚠L1	1-421-915-11	COIL, LINE FILTER			
**********					
*	1-664-278-11	AC 2 BOARD			
		**********			
		< BUS BAR >			
* BB101	1-560-242-11	BUS BAR 3P			
		< CAPACITOR >			
C102	1-117-784-11	ELECT(BLOCK)	2200uF	20%	50V
C103	1-117-784-11	ELECT(BLOCK)	2200uF	20%	50V
C109	1-117-783-11	ELECT	13000uF	20%	16V
C110	1-126-013-11	ELECT	1000uF	20%	16V
C115	1-136-165-00	FILM	0.1uF	5%	50V
C116	1-128-555-11	ELECT	470uF	20%	63V
C123	1-162-294-31	CERAMIC	0.001uF	10%	50V
C124	1-164-159-11	CERAMIC	0.1uF		50V
C125	1-164-159-11	CERAMIC	0.1uF		50V
C126	1-164-159-11	CERAMIC	0.1uF		50V
C127	1-164-159-11	CERAMIC	0.1uF		50V
C128	1-162-294-31	CERAMIC	0.001uF	10%	50V
C129	1-162-294-31	CERAMIC	0.001uF	10%	50V
C130	1-162-294-31	CERAMIC	0.001uF	10%	50V
C131	1-164-159-11	CERAMIC	0.1uF		50V
C132	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
* CN305	1-564-242-00	PIN, CONNECTOR 5P			
* CN306	1-564-243-11	PIN, CONNECTOR 6P			
		< DIODE >			
D101	8-719-302-37	DIODE RBV-602			
D112	8-719-302-37	DIODE RBV-602			
D113	8-719-911-19	DIODE 1SS119-25			
D114	8-719-911-19	DIODE 1SS119-25			
D115	8-719-024-99	DIODE 11ES2-NTA2B			
D116	8-719-024-99	DIODE 11ES2-NTA2B			
D117	8-719-024-99	DIODE 11ES2-NTA2B			
D118	8-719-024-99	DIODE 11ES2-NTA2B			
		< TERMINAL >			
* E1	1-537-738-21	TERMINAL, EARTH			
* E2	1-537-738-21	TERMINAL, EARTH			
**********					
*	A-4542-496-A	DECODER BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C1001	1-124-473-11	ELECT	1000uF	20%	10V
C1002	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C1003	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1004	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1005	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1006	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1007	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1008	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1009	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1010	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1011	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1012	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1013	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1014	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1015	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1016	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1017	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C1018	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1019	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C1020	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C1021	1-163-235-11	CERAMIC CHIP	22PF	5%	50V

Ref. No.	Part No.	Description			Remark
C1022	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C1023	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1024	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1025	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1026	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1027	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1028	1-126-049-11	ELECT	22uF	20%	50V
C1031	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1032	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1033	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1034	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1035	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1037	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C1044	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C1069	1-164-232-11	CERAMIC CHIP	0.01uF	10%	100V
		< CONNECTOR >			
* CN1001	1-564-508-11	PLUG, CONNECTOR 5P			
* CN1002	1-568-934-11	PIN, CONNECTOR 7P			
* CN1003	1-568-955-11	PIN, CONNECTOR 6P			
CN1005	1-564-510-11	PLUG, CONNECTOR 7P			
		< DIODE >			
D1001	8-719-820-05	DIODE 1SS181			
D1002	8-719-820-05	DIODE 1SS181			
		< GROUND PLATE >			
* EP1001	4-870-539-00	PLATE, GROUND			
		< IC >			
IC1001	8-759-528-31	IC DSP56002FC66			
IC1002	8-759-528-34	IC HD64F3337YFLH16MPEG1			
IC1003	8-759-532-24	IC N341256SJ-15-TE2			
IC1004	8-759-532-24	IC N341256SJ-15-TE2			
IC1005	8-759-532-24	IC N341256SJ-15-TE2			
IC1006	8-759-525-00	IC CXD8751Q			
		< RESISTOR >			
R1001	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1002	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1003	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1004	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1005	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1006	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1007	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1008	1-216-025-91	RES,CHIP	100	5%	1/10W
R1010	1-216-025-91	RES,CHIP	100	5%	1/10W
R1011	1-216-025-91	RES,CHIP	100	5%	1/10W
R1012	1-216-025-91	RES,CHIP	100	5%	1/10W
R1013	1-216-025-91	RES,CHIP	100	5%	1/10W
R1014	1-216-025-91	RES,CHIP	100	5%	1/10W
R1015	1-216-025-91	RES,CHIP	100	5%	1/10W
R1016	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1017	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1018	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1019	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R1020	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1021	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1022	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1023	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1024	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1025	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1026	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1027	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1028	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1029	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1030	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1032	1-216-295-91	SHORT	0		
R1033	1-216-295-91	SHORT	0		
R1048	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1049	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1050	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1051	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1052	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1053	1-216-001-00	METAL CHIP	10	5%	1/10W
R1055	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1060	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1061	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1062	1-216-029-00	METAL CHIP	150	5%	1/10W
R1063	1-216-025-91	RES,CHIP	100	5%	1/10W
R1064	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1065	1-216-025-91	RES,CHIP	100	5%	1/10W
R1066	1-216-025-91	RES,CHIP	100	5%	1/10W
R1067	1-216-025-91	RES,CHIP	100	5%	1/10W
R1068	1-216-025-91	RES,CHIP	100	5%	1/10W
		< VIBRATOR >			
X1001	1-767-496-11	VIBRATOR, CERAMIC (16MHz)			
**********					
*	A-4392-303-A	DISPLAY BOARD, COMPLETE			
		**********			
*	4-921-941-71	CUSHION (FL)			
*	4-987-862-01	HOLDER (FL TUBE)			
		< CAPACITOR >			
C251	1-126-964-11	ELECT	10uF	20%	50V
C252	1-164-159-11	CERAMIC	0.1uF		50V
C253	1-164-159-11	CERAMIC	0.1uF		50V
C254	1-126-964-11	ELECT	10uF	20%	50V
C255	1-126-964-11	ELECT	10uF	20%	50V
C257	1-164-159-11	CERAMIC	0.1uF		50V
C258	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
* CN107	1-564-523-11	PLUG, CONNECTOR 8P			
* CN206	1-568-867-11	SOCKET, CONNECTOR 25P			
		< DIODE >			
D251	8-719-911-19	DIODE 1SS119-25			
D252	8-719-911-19	DIODE 1SS119-25			

DISPLAY **MAIN**

Ref. No.	Part No.	Description				Remark
D253	8-719-911-19	DIODE 1SS119-25				
D254	8-719-933-39	DIODE HZS6C1L				
D255	8-719-024-99	DIODE 11ES2-NTA2B				
D257	8-719-911-19	DIODE 1SS119-25				
D258	8-719-911-19	DIODE 1SS119-25				
		< FLUORESCENT INDICATOR >				
FL251	1-517-645-11	INDICATOR TUBE, FLUORESCENT				
		< IC >				
IC251	8-759-999-53	IC MSC1164GS-K				
IC252	8-759-075-35	IC TD62C950RF				
IC253	8-759-962-08	IC BA6208				
IC254	8-759-916-48	IC SN74HC151AN				
IC255	8-759-916-48	IC SN74HC151AN				
IC256	8-759-373-49	IC NJL54H400				
		< TRANSISTOR >				
Q251	8-729-900-63	TRANSISTOR DTA124ES				
		< RESISTOR >				
R251	1-249-429-11	CARBON	10K	5%	1/4W	
R252	1-249-429-11	CARBON	10K	5%	1/4W	
R253	1-249-429-11	CARBON	10K	5%	1/4W	
R254	1-249-429-11	CARBON	10K	5%	1/4W	
R255	1-249-429-11	CARBON	10K	5%	1/4W	
R256	1-249-429-11	CARBON	10K	5%	1/4W	
R257	1-249-429-11	CARBON	10K	5%	1/4W	
R258	1-249-429-11	CARBON	10K	5%	1/4W	
R259	1-249-429-11	CARBON	10K	5%	1/4W	
R260	1-249-429-11	CARBON	10K	5%	1/4W	
R261	1-249-429-11	CARBON	10K	5%	1/4W	
R262	1-249-429-11	CARBON	10K	5%	1/4W	
R263	1-249-429-11	CARBON	10K	5%	1/4W	
R264	1-249-429-11	CARBON	10K	5%	1/4W	
R265	1-249-429-11	CARBON	10K	5%	1/4W	
R266	1-249-429-11	CARBON	10K	5%	1/4W	
R267	1-249-429-11	CARBON	10K	5%	1/4W	
R268	1-247-807-31	CARBON	100	5%	1/4W	
R269	1-247-807-31	CARBON	100	5%	1/4W	
R270	1-247-807-31	CARBON	100	5%	1/4W	
R271	1-247-807-31	CARBON	100	5%	1/4W	
R272	1-260-103-11	CARBON	2.2K	5%	1/2W	
R273	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R274	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R275	1-249-413-11	CARBON	470	5%	1/4W	F
R276	1-260-070-11	CARBON	3.3	5%	1/2W	
R277	1-249-429-11	CARBON	10K	5%	1/4W	
R278	1-249-429-11	CARBON	10K	5%	1/4W	
R279	1-249-429-11	CARBON	10K	5%	1/4W	
R280	1-260-070-11	CARBON	3.3	5%	1/2W	
R281	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R282	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R283	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R284	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R285	1-249-421-11	CARBON	2.2K	5%	1/4W	F

Ref. No.	Part No.	Description				Remark
		< SWITCH >				
S2	1-475-074-11	ENCODER, ROTARY (WITH SWTICH) (MENU, PUSH SELECT)				
S3	1-475-075-11	ENCODER (ROTARY TYPE)(+/–)				
S251	1-554-303-21	SWITCH, TACTILE (AC-3 RF)				
S252	1-554-303-21	SWITCH, TACTILE (DIGITAL 1)				
S253	1-554-303-21	SWITCH, TACTILE (DIGITAL 2)				
S254	1-554-303-21	SWITCH, TACTILE (DIGITAL 3)				
S255	1-554-303-21	SWITCH, TACTILE (BASS BOOST)				
S256	1-554-303-21	SWITCH, TACTILE (MPEG/DOLBY DIGITAL)				
S257	1-554-303-21	SWITCH, TACTILE (MODE)				
S258	1-554-303-21	SWITCH, TACTILE (OFF)				
S259	1-554-303-21	SWITCH, TACTILE (DIGITAL 4 COAXIAL)				
S260	1-554-303-21	SWITCH, TACTILE (SET UP)				
S261	1-554-303-21	SWITCH, TACTILE (BYPASS)				
**********						
*	A-4542-494-A	MAIN BOARD, COMPLETE **********				
	2-259-121-01	SCREW, TR				
	3-831-441-99	CUSHION				
	4-989-736-01	SPACER				
		< BUS BAR >				
* BB301	1-560-242-21	BUS BAR 4P				
		< CAPACITOR >				
C151	1-124-557-11	ELECT	1000uF	20%	25V	
C152	1-124-557-11	ELECT	1000uF	20%	25V	
C153	1-126-943-11	ELECT	2200uF	20%	25V	
C154	1-126-943-11	ELECT	2200uF	20%	25V	
C155	1-126-943-11	ELECT	2200uF	20%	25V	
C201	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C202	1-126-049-11	ELECT	22uF	20%	50V	
C203	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V	
C204	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C205	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C206	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C207	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C208	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C209	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V	
C210	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C211	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C212	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C301	1-163-251-11	CERAMIC CHIP	100PF	5%	50V	
C302	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C303	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C304	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V	
C305	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V	
C307	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C308	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C309	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C310	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C316	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C317	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C401	1-165-319-11	CERAMIC CHIP	0.1uF		50V	

Ref. No.	Part No.	Description			Remark
C402	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C403	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C404	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C405	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C406	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C407	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C408	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C409	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C410	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C411	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C412	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C413	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C414	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C415	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C416	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C417	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C418	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C419	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C420	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C421	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C422	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C423	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C424	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C425	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C426	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C427	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C428	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C429	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C430	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C431	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C432	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C433	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C434	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C435	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C436	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C437	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C438	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C439	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C440	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C441	1-126-023-11	ELECT	100uF	20%	25V
C442	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C445	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C446	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C448	1-136-157-00	FILM	0.022uF	5%	50V
C449	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C450	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C451	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C452	1-126-049-11	ELECT	22uF	20%	50V
C453	1-126-023-11	ELECT	100uF	20%	25V
C454	1-126-049-11	ELECT	22uF	20%	50V
C455	1-136-165-00	FILM	0.1uF	5%	50V
C456	1-126-049-11	ELECT	22uF	20%	50V
C457	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C458	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C459	1-136-157-00	FILM	0.022uF	5%	50V
C460	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C461	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C462	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C463	1-126-049-11	ELECT	22uF	20%	50V
C464	1-126-023-11	ELECT	100uF	20%	25V
C465	1-126-049-11	ELECT	22uF	20%	50V
C466	1-136-165-00	FILM	0.1uF	5%	50V
C467	1-126-049-11	ELECT	22uF	20%	50V
C468	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C469	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C470	1-136-157-00	FILM	0.022uF	5%	50V
C471	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C472	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C473	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C474	1-126-049-11	ELECT	22uF	20%	50V
C475	1-126-023-11	ELECT	100uF	20%	25V
C476	1-126-049-11	ELECT	22uF	20%	50V
C477	1-136-165-00	FILM	0.1uF	5%	50V
C478	1-126-049-11	ELECT	22uF	20%	50V
C479	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C480	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C481	1-136-157-00	FILM	0.022uF	5%	50V
C482	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C483	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C484	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C485	1-126-049-11	ELECT	22uF	20%	50V
C486	1-126-023-11	ELECT	100uF	20%	25V
C487	1-126-049-11	ELECT	22uF	20%	50V
C488	1-136-165-00	FILM	0.1uF	5%	50V
C489	1-126-049-11	ELECT	22uF	20%	50V
C490	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C491	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C492	1-136-157-00	FILM	0.022uF	5%	50V
C493	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C494	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C495	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C496	1-126-049-11	ELECT	22uF	20%	50V
C497	1-126-023-11	ELECT	100uF	20%	25V
C498	1-126-049-11	ELECT	22uF	20%	50V
C499	1-136-165-00	FILM	0.1uF	5%	50V
C500	1-126-049-11	ELECT	22uF	20%	50V
C501	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C502	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C503	1-136-157-00	FILM	0.022uF	5%	50V
C504	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C505	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C506	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C507	1-126-049-11	ELECT	22uF	20%	50V
C508	1-126-023-11	ELECT	100uF	20%	25V
C509	1-126-049-11	ELECT	22uF	20%	50V
C510	1-136-165-00	FILM	0.1uF	5%	50V
C511	1-126-049-11	ELECT	22uF	20%	50V
C512	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C513	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C514	1-136-154-00	FILM	0.012uF	5%	50V
C515	1-136-157-00	FILM	0.022uF	5%	50V
C516	1-136-154-00	FILM	0.012uF	5%	50V
C517	1-130-481-00	MYLAR	0.0068uF	5%	50V

MAIN

Ref. No.	Part No.	Description			Remark
C518	1-130-481-00	MYLAR	0.0068uF	5%	50V
C519	1-136-154-00	FILM	0.012uF	5%	50V
C520	1-136-157-00	FILM	0.022uF	5%	50V
C521	1-136-154-00	FILM	0.012uF	5%	50V
C522	1-130-481-00	MYLAR	0.0068uF	5%	50V
C523	1-130-481-00	MYLAR	0.0068uF	5%	50V
C524	1-136-154-00	FILM	0.012uF	5%	50V
C525	1-136-157-00	FILM	0.022uF	5%	50V
C526	1-136-154-00	FILM	0.012uF	5%	50V
C527	1-130-481-00	MYLAR	0.0068uF	5%	50V
C528	1-130-481-00	MYLAR	0.0068uF	5%	50V
C529	1-136-154-00	FILM	0.012uF	5%	50V
C530	1-136-157-00	FILM	0.022uF	5%	50V
C531	1-136-154-00	FILM	0.012uF	5%	50V
C532	1-130-481-00	MYLAR	0.0068uF	5%	50V
C533	1-130-481-00	MYLAR	0.0068uF	5%	50V
C534	1-136-154-00	FILM	0.012uF	5%	50V
C535	1-136-157-00	FILM	0.022uF	5%	50V
C536	1-136-154-00	FILM	0.012uF	5%	50V
C537	1-130-481-00	MYLAR	0.0068uF	5%	50V
C538	1-130-481-00	MYLAR	0.0068uF	5%	50V
C539	1-136-154-00	FILM	0.012uF	5%	50V
C540	1-136-157-00	FILM	0.022uF	5%	50V
C541	1-136-154-00	FILM	0.012uF	5%	50V
C542	1-130-481-00	MYLAR	0.0068uF	5%	50V
C543	1-130-481-00	MYLAR	0.0068uF	5%	50V
C544	1-126-023-11	ELECT	100uF	20%	25V
C545	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C546	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C547	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C548	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C549	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C550	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C551	1-126-049-11	ELECT	22uF	20%	50V
C552	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C553	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C554	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C555	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C556	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C557	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C558	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C559	1-126-049-11	ELECT	22uF	20%	50V
C560	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C561	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C562	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C563	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C564	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C565	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C566	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C567	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C568	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C569	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C570	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C571	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C572	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C573	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C574	1-165-319-11	CERAMIC CHIP	0.1uF		50V

Ref. No.	Part No.	Description			Remark
C575	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C576	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C577	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C578	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C579	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C601	1-110-339-11	MYLAR	220PF	5%	50V
C602	1-110-339-11	MYLAR	220PF	5%	50V
C603	1-136-165-00	FILM	0.1uF	5%	50V
C604	1-136-165-00	FILM	0.1uF	5%	50V
C605	1-130-469-00	MYLAR	680PF	5%	50V
C606	1-130-477-00	MYLAR	0.0033uF	5%	50V
C607	1-110-339-11	MYLAR	220PF	5%	50V
C608	1-110-339-11	MYLAR	220PF	5%	50V
C609	1-136-165-00	FILM	0.1uF	5%	50V
C610	1-136-165-00	FILM	0.1uF	5%	50V
C611	1-130-469-00	MYLAR	680PF	5%	50V
C612	1-130-477-00	MYLAR	0.0033uF	5%	50V
C613	1-110-339-11	MYLAR	220PF	5%	50V
C614	1-110-339-11	MYLAR	220PF	5%	50V
C615	1-136-165-00	FILM	0.1uF	5%	50V
C616	1-136-165-00	FILM	0.1uF	5%	50V
C617	1-130-469-00	MYLAR	680PF	5%	50V
C618	1-130-477-00	MYLAR	0.0033uF	5%	50V
C619	1-110-339-11	MYLAR	220PF	5%	50V
C620	1-110-339-11	MYLAR	220PF	5%	50V
C621	1-136-165-00	FILM	0.1uF	5%	50V
C622	1-136-165-00	FILM	0.1uF	5%	50V
C623	1-130-469-00	MYLAR	680PF	5%	50V
C624	1-130-477-00	MYLAR	0.0033uF	5%	50V
C625	1-110-339-11	MYLAR	220PF	5%	50V
C626	1-110-339-11	MYLAR	220PF	5%	50V
C627	1-136-165-00	FILM	0.1uF	5%	50V
C628	1-136-165-00	FILM	0.1uF	5%	50V
C629	1-130-469-00	MYLAR	680PF	5%	50V
C630	1-130-477-00	MYLAR	0.0033uF	5%	50V
C631	1-110-339-11	MYLAR	220PF	5%	50V
C632	1-110-339-11	MYLAR	220PF	5%	50V
C633	1-136-165-00	FILM	0.1uF	5%	50V
C634	1-136-165-00	FILM	0.1uF	5%	50V
C635	1-130-469-00	MYLAR	680PF	5%	50V
C636	1-130-477-00	MYLAR	0.0033uF	5%	50V
C637	1-110-339-11	MYLAR	220PF	5%	50V
C638	1-102-947-00	CERAMIC	10PF	5%	50V
C639	1-126-049-11	ELECT	22uF	20%	50V
C640	1-126-049-11	ELECT	22uF	20%	50V
C641	1-110-339-11	MYLAR	220PF	5%	50V
C642	1-102-947-00	CERAMIC	10PF	5%	50V
C643	1-126-049-11	ELECT	22uF	20%	50V
C644	1-126-049-11	ELECT	22uF	20%	50V
C645	1-110-339-11	MYLAR	220PF	5%	50V
C646	1-102-947-00	CERAMIC	10PF	5%	50V
C647	1-126-049-11	ELECT	22uF	20%	50V
C648	1-126-049-11	ELECT	22uF	20%	50V
C649	1-110-339-11	MYLAR	220PF	5%	50V
C650	1-102-947-00	CERAMIC	10PF	5%	50V
C651	1-126-049-11	ELECT	22uF	20%	50V

Ref. No.	Part No.	Description			Remark
C652	1-126-049-11	ELECT	22uF	20%	50V
C653	1-110-339-11	MYLAR	220PF	5%	50V
C654	1-102-947-00	CERAMIC	10PF	5%	50V
C655	1-126-049-11	ELECT	22uF	20%	50V
C656	1-126-049-11	ELECT	22uF	20%	50V
C657	1-110-339-11	MYLAR	220PF	5%	50V
C658	1-102-947-00	CERAMIC	10PF	5%	50V
C659	1-126-049-11	ELECT	22uF	20%	50V
C660	1-126-049-11	ELECT	22uF	20%	50V
C661	1-126-049-11	ELECT	22uF	20%	50V
C662	1-126-049-11	ELECT	22uF	20%	50V
C663	1-126-049-11	ELECT	22uF	20%	50V
C664	1-126-049-11	ELECT	22uF	20%	50V
C665	1-126-049-11	ELECT	22uF	20%	50V
C666	1-126-049-11	ELECT	22uF	20%	50V
C667	1-126-049-11	ELECT	22uF	20%	50V
C668	1-126-049-11	ELECT	22uF	20%	50V
C669	1-126-049-11	ELECT	22uF	20%	50V
C670	1-126-049-11	ELECT	22uF	20%	50V
C671	1-126-049-11	ELECT	22uF	20%	50V
C672	1-126-049-11	ELECT	22uF	20%	50V
C673	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C674	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C675	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C676	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C677	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C678	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C901	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C902	1-163-248-11	CERAMIC CHIP	75PF	5%	50V
C903	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C904	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C905	1-136-165-00	FILM	0.1uF	5%	50V
C906	1-136-173-00	FILM	0.47uF	5%	50V
C907	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C908	1-136-173-00	FILM	0.47uF	5%	50V
C909	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C910	1-126-933-11	ELECT	100uF	20%	10V
C911	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C912	1-107-701-11	ELECT	47uF	20%	10V
C913	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C914	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C915	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C916	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C917	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C918	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C919	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C920	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C921	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C922	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C923	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C924	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C925	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C926	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C930	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C931	1-165-319-11	CERAMIC CHIP	0.1uF		50V

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN102	1-564-510-11	PLUG, CONNECTOR 7P	
* CN103	1-564-104-00	PIN, CONNECTOR (B3P-VH) 3P	
CN104	1-564-320-00	PIN, CONNECTOR (B2P-VH) 2P	
CN105	1-564-510-11	PLUG (MICRO CONNECTOR) 6P	
* CN106	1-568-841-11	SOCKET, CONNECTOR 25P	
CN701	1-695-087-11	PIN, CONNECTOR (PC BOARD) 7P	
CN702	1-695-090-11	PIN, CONNECTOR (PC BOARD) 13P	
		< DIODE >	
D151	8-719-801-78	DIODE 1SS184	
D152	8-719-801-78	DIODE 1SS184	
D201	8-719-820-05	DIODE 1SS181	
D401	8-719-043-82	DIODE 02CZ5.1Y-TE85L	
D607	8-719-801-78	DIODE 1SS184	
D608	8-719-801-78	DIODE 1SS184	
D901	8-719-061-62	DIODE KV1851	
		< FERRITE BEAD >	
F401	1-424-544-11	FERRITE 0UH	
F402	1-424-544-11	FERRITE 0UH	
F403	1-424-544-11	FERRITE 0UH	
F404	1-424-544-11	FERRITE 0UH	
FB401	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
FB402	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
FB403	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
FB404	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
FB405	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
FB406	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
FB888	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
FB889	1-410-397-21	FERRITE BEAD INDUCTOR 1.1uH	
		< FILTER >	
FL902	1-233-866-11	FILTER, BAND PASS	
		< IC >	
IC151	8-759-071-48	IC TA7807S	
IC152	8-759-071-47	IC TA79007S	
IC201	8-759-528-33	IC HD64F3337YFLH16MAIN1	
IC202	8-759-354-31	IC AT24C02N-10SC∗	
IC203	8-759-635-63	IC M51943BSL	
IC301	8-759-326-72	IC LC8905VD	
IC302	8-759-926-17	IC SN74HC153ANS	
IC303	8-749-923-04	IC TOTX178 (REC OUT OUTPUT)	
IC304	8-749-923-05	IC TORX178A (DIGITAL 3 INPUT)	
IC305	8-749-923-05	IC TORX178A (DIGITAL 2 INPUT)	
IC306	8-749-923-05	IC TORX178A (DIGITAL 1 INPUT)	
IC307	8-759-242-70	IC TC7WU04F	
IC401	8-759-326-71	IC CXD8517Q	
IC402	8-759-326-71	IC CXD8517Q	
IC403	8-759-326-71	IC CXD8517Q	
IC404	8-759-232-65	IC TC74HC157AF	
IC405	8-759-370-62	IC CXD8505BQ	
IC406	8-759-370-62	IC CXD8505BQ	
IC407	8-759-370-62	IC CXD8505BQ	
IC408	8-759-233-64	IC TC74HCU04AF	

MAIN

Ref. No.	Part No.	Description	Remark
IC409	8-759-371-51	IC CXA8042AS	
IC410	8-759-371-51	IC CXA8042AS	
IC411	8-759-371-51	IC CXA8042AS	
IC412	8-759-371-51	IC CXA8042AS	
IC413	8-759-371-51	IC CXA8042AS	
IC414	8-759-371-51	IC CXA8042AS	
IC415	8-759-636-55	IC M5218AFP	
IC416	8-759-636-55	IC M5218AFP	
IC417	8-759-636-55	IC M5218AFP	
IC418	8-759-636-55	IC M5218AFP	
IC419	8-759-636-55	IC M5218AFP	
IC420	8-759-636-55	IC M5218AFP	
IC421	8-759-449-11	IC M62361FP-T1	
IC422	8-759-532-23	IC N341024TJ-20-TEL	
IC423	8-759-446-40	IC SSP424023FJ88	
IC424	8-759-446-37	IC DSP56009FJ88F	
IC425	8-759-233-64	IC TC74HCU04AF	
IC426	8-759-630-34	IC M5278L05M	
IC601	8-759-636-55	IC M5218AFP	
IC602	8-759-636-55	IC M5218AFP	
IC603	8-759-636-55	IC M5218AFP	
IC604	8-759-636-55	IC M5218AFP	
IC605	8-759-636-55	IC M5218AFP	
IC606	8-759-636-55	IC M5218AFP	
IC607	8-759-636-55	IC M5218AFP	
IC608	8-759-636-55	IC M5218AFP	
IC609	8-759-636-55	IC M5218AFP	
IC901	8-759-446-38	IC PD4606A	
IC902	8-759-262-03	IC MC14577CF	
IC903	8-759-702-08	IC NJM360M	
IC904	8-759-636-55	IC M5218AFP	
IC905	8-759-636-55	IC M5218AFP	
IC906	8-759-233-64	IC TC74HCU04AF	
IC907	8-759-490-80	IC N341256SJ-20-TE2	
IC908	8-759-490-80	IC N341256SJ-20-TE2	
		< JACK >	
J301	1-568-750-21	JACK, PIN (1P SHIELD TYPE) (DIGITAL 4 INPUT)	
J601	1-778-064-11	JACK, PIN 4P (FRONT, REAR OUTPUT)	
J602	1-779-492-11	JACK, PIN 4P (WOOFER, CENTER OUTPUT)	
J603	1-779-493-11	JACK, PIN 6P (BYPASS INPUT)	
J901	1-779-734-11	JACK, PIN (AC-3 RF INPUT)	
		< JUMPER RESISTOR >	
JW201	1-216-296-91	SHORT 0	
JW202	1-216-296-91	SHORT 0	
JW203	1-216-296-91	SHORT 0	
JW204	1-216-295-91	SHORT 0	
JW301	1-216-295-91	SHORT 0	
JW302	1-216-296-91	SHORT 0	
JW303	1-216-296-91	SHORT 0	
JW304	1-216-296-91	SHORT 0	
JW305	1-216-295-91	SHORT 0	
JW306	1-216-295-91	SHORT 0	
JW307	1-216-295-91	SHORT 0	
JW401	1-216-296-91	SHORT 0	
JW402	1-216-296-91	SHORT 0	
JW403	1-216-295-91	SHORT 0	
JW405	1-216-295-91	SHORT 0	
JW501	1-216-295-91	SHORT 0	
JW504	1-216-295-91	SHORT 0	
JW506	1-216-296-91	SHORT 0	
JW507	1-216-296-91	SHORT 0	
JW508	1-216-296-91	SHORT 0	
JW509	1-216-296-91	SHORT 0	
JW510	1-216-296-91	SHORT 0	
JW511	1-216-296-91	SHORT 0	
JW512	1-216-296-91	SHORT 0	
JW513	1-216-296-91	SHORT 0	
JW514	1-216-296-91	SHORT 0	
JW515	1-216-296-91	SHORT 0	
JW516	1-216-296-91	SHORT 0	
JW517	1-216-296-91	SHORT 0	
JW518	1-216-296-91	SHORT 0	
JW519	1-216-296-91	SHORT 0	
JW520	1-216-296-91	SHORT 0	
JW601	1-216-296-91	SHORT 0	
JW602	1-216-296-91	SHORT 0	
JW603	1-216-296-91	SHORT 0	
JW604	1-216-296-91	SHORT 0	
JW901	1-216-295-91	SHORT 0	
JW902	1-216-296-91	SHORT 0	
JW903	1-216-296-91	SHORT 0	
JW904	1-216-296-91	SHORT 0	
		< COIL >	
L901	1-410-391-11	INDUCTOR CHIP 68uH	
		< TRANSISTOR >	
Q617	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q618	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q619	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q620	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q621	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q622	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q623	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q624	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q625	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q626	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q627	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q628	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q901	8-729-901-05	TRANSISTOR DTA124EK	
Q902	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q903	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q904	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R201	1-216-121-91	RES,CHIP 1M 5% 1/10W	
R202	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R203	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R204	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R205	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R206	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R207	1-216-073-00	METAL CHIP 10K 5% 1/10W	

Ref. No.	Part No.	Description			Remark
R208	1-216-073-00	METAL CHIP	10K	5%	1/10W
R209	1-216-295-91	SHORT	0		
R301	1-216-022-00	METAL CHIP	75	5%	1/10W
R302	1-216-109-00	METAL CHIP	330K	5%	1/10W
R303	1-216-081-00	METAL CHIP	22K	5%	1/10W
R304	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R305	1-216-029-00	METAL CHIP	150	5%	1/10W
R306	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R307	1-216-022-00	METAL CHIP	75	5%	1/10W
R309	1-216-022-00	METAL CHIP	75	5%	1/10W
R310	1-216-022-00	METAL CHIP	75	5%	1/10W
R311	1-216-022-00	METAL CHIP	75	5%	1/10W
R313	1-216-022-00	METAL CHIP	75	5%	1/10W
R314	1-216-049-91	RES,CHIP	1K	5%	1/10W
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W
R316	1-216-049-91	RES,CHIP	1K	5%	1/10W
R401	1-216-025-91	RES,CHIP	100	5%	1/10W
R402	1-216-025-91	RES,CHIP	100	5%	1/10W
R403	1-216-025-91	RES,CHIP	100	5%	1/10W
R404	1-216-025-91	RES,CHIP	100	5%	1/10W
R405	1-216-025-91	RES,CHIP	100	5%	1/10W
R406	1-216-025-91	RES,CHIP	100	5%	1/10W
R407	1-216-025-91	RES,CHIP	100	5%	1/10W
R408	1-216-025-91	RES,CHIP	100	5%	1/10W
R409	1-216-025-91	RES,CHIP	100	5%	1/10W
R410	1-216-025-91	RES,CHIP	100	5%	1/10W
R411	1-216-025-91	RES,CHIP	100	5%	1/10W
R412	1-216-025-91	RES,CHIP	100	5%	1/10W
R413	1-216-033-00	METAL CHIP	220	5%	1/10W
R414	1-216-033-00	METAL CHIP	220	5%	1/10W
R415	1-216-033-00	METAL CHIP	220	5%	1/10W
R416	1-216-025-91	RES,CHIP	100	5%	1/10W
R417	1-216-025-91	RES,CHIP	100	5%	1/10W
R418	1-216-025-91	RES,CHIP	100	5%	1/10W
R419	1-216-025-91	RES,CHIP	100	5%	1/10W
R420	1-216-295-91	SHORT	0		
R421	1-216-295-91	SHORT	0		
R422	1-216-025-91	RES,CHIP	100	5%	1/10W
R423	1-216-025-91	RES,CHIP	100	5%	1/10W
R424	1-216-025-91	RES,CHIP	100	5%	1/10W
R425	1-216-025-91	RES,CHIP	100	5%	1/10W
R426	1-216-025-91	RES,CHIP	100	5%	1/10W
R427	1-216-025-91	RES,CHIP	100	5%	1/10W
R428	1-216-025-91	RES,CHIP	100	5%	1/10W
R429	1-216-025-91	RES,CHIP	100	5%	1/10W
R430	1-216-025-91	RES,CHIP	100	5%	1/10W
R431	1-216-025-91	RES,CHIP	100	5%	1/10W
R432	1-216-025-91	RES,CHIP	100	5%	1/10W
R433	1-216-025-91	RES,CHIP	100	5%	1/10W
R434	1-216-295-91	SHORT	0		
R435	1-216-025-91	RES,CHIP	100	5%	1/10W
R436	1-216-025-91	RES,CHIP	100	5%	1/10W
R437	1-216-025-91	RES,CHIP	100	5%	1/10W
R438	1-216-025-91	RES,CHIP	100	5%	1/10W
R440	1-216-025-91	RES,CHIP	100	5%	1/10W
R441	1-216-025-91	RES,CHIP	100	5%	1/10W
R443	1-216-025-91	RES,CHIP	100	5%	1/10W

Ref. No.	Part No.	Description			Remark
R444	1-216-025-91	RES,CHIP	100	5%	1/10W
R446	1-216-073-00	METAL CHIP	10K	5%	1/10W
R448	1-216-025-91	RES,CHIP	100	5%	1/10W
R449	1-216-025-91	RES,CHIP	100	5%	1/10W
R450	1-216-025-91	RES,CHIP	100	5%	1/10W
R451	1-216-025-91	RES,CHIP	100	5%	1/10W
R452	1-216-025-91	RES,CHIP	100	5%	1/10W
R453	1-216-025-91	RES,CHIP	100	5%	1/10W
R455	1-216-025-91	RES,CHIP	100	5%	1/10W
R456	1-216-025-91	RES,CHIP	100	5%	1/10W
R457	1-216-025-91	RES,CHIP	100	5%	1/10W
R458	1-216-025-91	RES,CHIP	100	5%	1/10W
R460	1-216-049-91	RES,CHIP	1K	5%	1/10W
R461	1-216-049-91	RES,CHIP	1K	5%	1/10W
R462	1-216-049-91	RES,CHIP	1K	5%	1/10W
R465	1-216-025-91	RES,CHIP	100	5%	1/10W
R466	1-216-025-91	RES,CHIP	100	5%	1/10W
R467	1-259-971-11	CARBON MELF	10	2%	1/8W
R468	1-259-971-11	CARBON MELF	10	2%	1/8W
R469	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R470	1-259-992-11	CARBON MELF	560	2%	1/8W
R471	1-259-971-11	CARBON MELF	10	2%	1/8W
R472	1-259-971-11	CARBON MELF	10	2%	1/8W
R473	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R474	1-259-992-11	CARBON MELF	560	2%	1/8W
R475	1-259-971-11	CARBON MELF	10	2%	1/8W
R476	1-259-971-11	CARBON MELF	10	2%	1/8W
R477	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R478	1-259-992-11	CARBON MELF	560	2%	1/8W
R479	1-259-971-11	CARBON MELF	10	2%	1/8W
R480	1-259-971-11	CARBON MELF	10	2%	1/8W
R481	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R482	1-259-992-11	CARBON MELF	560	2%	1/8W
R483	1-259-971-11	CARBON MELF	10	2%	1/8W
R484	1-259-971-11	CARBON MELF	10	2%	1/8W
R485	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R486	1-259-992-11	CARBON MELF	560	2%	1/8W
R487	1-259-971-11	CARBON MELF	10	2%	1/8W
R488	1-259-971-11	CARBON MELF	10	2%	1/8W
R489	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R490	1-259-992-11	CARBON MELF	560	2%	1/8W
R491	1-259-971-11	CARBON MELF	10	2%	1/8W
R492	1-259-971-11	CARBON MELF	10	2%	1/8W
R493	1-259-988-11	CARBON MELF	270	2%	1/8W
R494	1-259-983-11	CARBON MELF	100	2%	1/8W
R495	1-259-976-11	CARBON MELF	27	2%	1/8W
R496	1-260-016-11	CARBON MELF	47K	2%	1/8W
R497	1-259-971-11	CARBON MELF	10	2%	1/8W
R498	1-259-971-11	CARBON MELF	10	2%	1/8W
R499	1-259-988-11	CARBON MELF	270	2%	1/8W
R500	1-259-976-11	CARBON MELF	27	2%	1/8W
R501	1-259-983-11	CARBON MELF	100	2%	1/8W
R502	1-259-971-11	CARBON MELF	10	2%	1/8W
R503	1-259-971-11	CARBON MELF	10	2%	1/8W
R504	1-259-988-11	CARBON MELF	270	2%	1/8W
R505	1-259-983-11	CARBON MELF	100	2%	1/8W

MAIN

Ref. No.	Part No.	Description			Remark
R506	1-259-976-11	CARBON MELF	27	2%	1/8W
R507	1-260-016-11	CARBON MELF	47K	2%	1/8W
R508	1-259-971-11	CARBON MELF	10	2%	1/8W
R509	1-259-971-11	CARBON MELF	10	2%	1/8W
R510	1-259-988-11	CARBON MELF	270	2%	1/8W
R511	1-259-976-11	CARBON MELF	27	2%	1/8W
R512	1-259-983-11	CARBON MELF	100	2%	1/8W
R513	1-259-971-11	CARBON MELF	10	2%	1/8W
R514	1-259-971-11	CARBON MELF	10	2%	1/8W
R515	1-259-988-11	CARBON MELF	270	2%	1/8W
R516	1-259-983-11	CARBON MELF	100	2%	1/8W
R517	1-259-976-11	CARBON MELF	27	2%	1/8W
R518	1-260-016-11	CARBON MELF	47K	2%	1/8W
R519	1-259-971-11	CARBON MELF	10	2%	1/8W
R520	1-259-971-11	CARBON MELF	10	2%	1/8W
R521	1-259-988-11	CARBON MELF	270	2%	1/8W
R522	1-259-976-11	CARBON MELF	27	2%	1/8W
R523	1-259-983-11	CARBON MELF	100	2%	1/8W
R524	1-259-971-11	CARBON MELF	10	2%	1/8W
R525	1-259-971-11	CARBON MELF	10	2%	1/8W
R526	1-259-988-11	CARBON MELF	270	2%	1/8W
R527	1-259-983-11	CARBON MELF	100	2%	1/8W
R528	1-259-976-11	CARBON MELF	27	2%	1/8W
R529	1-260-016-11	CARBON MELF	47K	2%	1/8W
R530	1-259-971-11	CARBON MELF	10	2%	1/8W
R531	1-259-971-11	CARBON MELF	10	2%	1/8W
R532	1-259-988-11	CARBON MELF	270	2%	1/8W
R533	1-259-976-11	CARBON MELF	27	2%	1/8W
R534	1-259-983-11	CARBON MELF	100	2%	1/8W
R535	1-259-971-11	CARBON MELF	10	2%	1/8W
R536	1-259-971-11	CARBON MELF	10	2%	1/8W
R537	1-259-988-11	CARBON MELF	270	2%	1/8W
R538	1-259-983-11	CARBON MELF	100	2%	1/8W
R539	1-259-976-11	CARBON MELF	27	2%	1/8W
R540	1-260-016-11	CARBON MELF	47K	2%	1/8W
R541	1-259-971-11	CARBON MELF	10	2%	1/8W
R542	1-259-971-11	CARBON MELF	10	2%	1/8W
R543	1-259-988-11	CARBON MELF	270	2%	1/8W
R544	1-259-976-11	CARBON MELF	27	2%	1/8W
R545	1-259-983-11	CARBON MELF	100	2%	1/8W
R546	1-259-971-11	CARBON MELF	10	2%	1/8W
R547	1-259-971-11	CARBON MELF	10	2%	1/8W
R548	1-259-988-11	CARBON MELF	270	2%	1/8W
R549	1-259-983-11	CARBON MELF	100	2%	1/8W
R550	1-259-976-11	CARBON MELF	27	2%	1/8W
R551	1-260-016-11	CARBON MELF	47K	2%	1/8W
R552	1-259-971-11	CARBON MELF	10	2%	1/8W
R553	1-259-971-11	CARBON MELF	10	2%	1/8W
R554	1-259-988-11	CARBON MELF	270	2%	1/8W
R555	1-259-976-11	CARBON MELF	27	2%	1/8W
R556	1-259-983-11	CARBON MELF	100	2%	1/8W
R558	1-216-295-91	SHORT	0		
R559	1-216-295-91	SHORT	0		
R560	1-216-025-91	RES,CHIP	100	5%	1/10W
R561	1-216-025-91	RES,CHIP	100	5%	1/10W
R562	1-216-025-91	RES,CHIP	100	5%	1/10W
R564	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R565	1-216-295-91	SHORT	0		
R567	1-216-025-91	RES,CHIP	100	5%	1/10W
R568	1-216-073-00	METAL CHIP	10K	5%	1/10W
R569	1-216-049-91	RES,CHIP	1K	5%	1/10W
R573	1-216-295-91	SHORT	0		
R577	1-216-295-91	SHORT	0		
R601	1-260-008-11	CARBON MELF	10K	2%	1/8W
R602	1-259-936-11	CARBON MELF	13K	2%	1/8W
R603	1-259-936-11	CARBON MELF	13K	2%	1/8W
R604	1-259-995-11	CARBON MELF	1K	2%	1/8W
R605	1-260-008-11	CARBON MELF	10K	2%	1/8W
R607	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R608	1-260-011-11	CARBON MELF	18K	2%	1/8W
R609	1-259-926-11	CARBON MELF	2K	2%	1/8W
R610	1-216-296-91	SHORT	0		
R611	1-260-008-11	CARBON MELF	10K	2%	1/8W
R612	1-259-936-11	CARBON MELF	13K	2%	1/8W
R613	1-259-936-11	CARBON MELF	13K	2%	1/8W
R614	1-259-995-11	CARBON MELF	1K	2%	1/8W
R615	1-260-008-11	CARBON MELF	10K	2%	1/8W
R617	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R618	1-260-011-11	CARBON MELF	18K	2%	1/8W
R619	1-259-926-11	CARBON MELF	2K	2%	1/8W
R620	1-216-296-91	SHORT	0		
R621	1-260-008-11	CARBON MELF	10K	2%	1/8W
R622	1-259-936-11	CARBON MELF	13K	2%	1/8W
R623	1-259-936-11	CARBON MELF	13K	2%	1/8W
R624	1-259-995-11	CARBON MELF	1K	2%	1/8W
R625	1-260-008-11	CARBON MELF	10K	2%	1/8W
R626	1-260-014-11	CARBON MELF	33K	2%	1/8W
R627	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R628	1-260-011-11	CARBON MELF	18K	2%	1/8W
R629	1-259-926-11	CARBON MELF	2K	2%	1/8W
R630	1-216-296-91	SHORT	0		
R631	1-260-008-11	CARBON MELF	10K	2%	1/8W
R632	1-259-936-11	CARBON MELF	13K	2%	1/8W
R633	1-259-936-11	CARBON MELF	13K	2%	1/8W
R634	1-259-995-11	CARBON MELF	1K	2%	1/8W
R635	1-260-008-11	CARBON MELF	10K	2%	1/8W
R637	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R638	1-260-011-11	CARBON MELF	18K	2%	1/8W
R639	1-259-926-11	CARBON MELF	2K	2%	1/8W
R640	1-216-296-91	SHORT	0		
R641	1-260-008-11	CARBON MELF	10K	2%	1/8W
R642	1-259-936-11	CARBON MELF	13K	2%	1/8W
R643	1-259-936-11	CARBON MELF	13K	2%	1/8W
R644	1-259-995-11	CARBON MELF	1K	2%	1/8W
R645	1-260-008-11	CARBON MELF	10K	2%	1/8W
R647	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R648	1-260-011-11	CARBON MELF	18K	2%	1/8W
R649	1-259-926-11	CARBON MELF	2K	2%	1/8W
R650	1-216-296-91	SHORT	0		
R651	1-260-008-11	CARBON MELF	10K	2%	1/8W
R652	1-259-936-11	CARBON MELF	13K	2%	1/8W
R653	1-259-936-11	CARBON MELF	13K	2%	1/8W
R654	1-259-995-11	CARBON MELF	1K	2%	1/8W
R655	1-260-008-11	CARBON MELF	10K	2%	1/8W

Ref. No.	Part No.	Description			Remark
R657	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R658	1-260-011-11	CARBON MELF	18K	2%	1/8W
R659	1-259-926-11	CARBON MELF	2K	2%	1/8W
R660	1-216-296-91	SHORT	0		
R661	1-260-012-11	CARBON MELF	22K	2%	1/8W
R662	1-260-012-11	CARBON MELF	22K	2%	1/8W
R663	1-249-427-11	CARBON	6.8K	5%	1/4W F
R664	1-249-427-11	CARBON	6.8K	5%	1/4W F
R665	1-259-995-11	CARBON MELF	1K	2%	1/8W
R666	1-260-026-11	CARBON MELF	330K	2%	1/8W
R667	1-260-014-11	CARBON MELF	33K	2%	1/8W
R668	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R669	1-259-995-11	CARBON MELF	1K	2%	1/8W
R670	1-260-026-11	CARBON MELF	330K	2%	1/8W
R671	1-260-014-11	CARBON MELF	33K	2%	1/8W
R672	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R673	1-260-012-11	CARBON MELF	22K	2%	1/8W
R674	1-260-010-11	CARBON MELF	15K	2%	1/8W
R675	1-249-427-11	CARBON	6.8K	5%	1/4W F
R676	1-260-007-11	CARBON MELF	8.2K	2%	1/8W
R677	1-259-995-11	CARBON MELF	1K	2%	1/8W
R678	1-260-026-11	CARBON MELF	330K	2%	1/8W
R679	1-260-014-11	CARBON MELF	33K	2%	1/8W
R680	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R681	1-259-995-11	CARBON MELF	1K	2%	1/8W
R682	1-260-026-11	CARBON MELF	330K	2%	1/8W
R683	1-260-019-91	CARBON MELF	82K	2%	1/8W
R684	1-260-007-11	CARBON MELF	8.2K	2%	1/8W
R685	1-260-012-11	CARBON MELF	22K	2%	1/8W
R686	1-260-012-11	CARBON MELF	22K	2%	1/8W
R687	1-249-427-11	CARBON	6.8K	5%	1/4W F
R688	1-249-427-11	CARBON	6.8K	5%	1/4W F
R689	1-259-995-11	CARBON MELF	1K	2%	1/8W
R690	1-260-026-11	CARBON MELF	330K	2%	1/8W
R691	1-260-014-11	CARBON MELF	33K	2%	1/8W
R692	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R693	1-259-995-11	CARBON MELF	1K	2%	1/8W
R694	1-260-026-11	CARBON MELF	330K	2%	1/8W
R695	1-260-014-11	CARBON MELF	33K	2%	1/8W
R696	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R721	1-260-020-11	CARBON MELF	100K	2%	1/8W
R722	1-259-983-11	CARBON MELF	100	2%	1/8W
R723	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R724	1-260-020-11	CARBON MELF	100K	2%	1/8W
R725	1-259-983-11	CARBON MELF	100	2%	1/8W
R726	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R727	1-260-020-11	CARBON MELF	100K	2%	1/8W
R728	1-259-983-11	CARBON MELF	100	2%	1/8W
R729	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R730	1-260-020-11	CARBON MELF	100K	2%	1/8W
R731	1-259-983-11	CARBON MELF	100	2%	1/8W
R732	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R733	1-260-020-11	CARBON MELF	100K	2%	1/8W
R734	1-259-983-11	CARBON MELF	100	2%	1/8W
R735	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R736	1-260-020-11	CARBON MELF	100K	2%	1/8W

Ref. No.	Part No.	Description			Remark
R737	1-259-983-11	CARBON MELF	100	2%	1/8W
R738	1-260-004-11	CARBON MELF	4.7K	2%	1/8W
R755	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R756	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R757	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R758	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R759	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R760	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R761	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R762	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R763	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R764	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R765	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R766	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R767	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R768	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R769	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R770	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R771	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R772	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R901	1-216-073-00	METAL CHIP	10K	5%	1/10W
R902	1-216-073-00	METAL CHIP	10K	5%	1/10W
R903	1-216-073-00	METAL CHIP	10K	5%	1/10W
R904	1-216-073-00	METAL CHIP	10K	5%	1/10W
R905	1-216-097-91	RES,CHIP	100K	5%	1/10W
R906	1-216-097-91	RES,CHIP	100K	5%	1/10W
R907	1-216-023-00	METAL CHIP	82	5%	1/10W
R908	1-216-042-00	METAL CHIP	510	5%	1/10W
R909	1-216-049-91	RES,CHIP	1K	5%	1/10W
R910	1-216-049-91	RES,CHIP	1K	5%	1/10W
R911	1-216-049-91	RES,CHIP	1K	5%	1/10W
R912	1-216-073-00	METAL CHIP	10K	5%	1/10W
R913	1-216-073-00	METAL CHIP	10K	5%	1/10W
R914	1-216-073-00	METAL CHIP	10K	5%	1/10W
R915	1-216-073-00	METAL CHIP	10K	5%	1/10W
R916	1-216-073-00	METAL CHIP	10K	5%	1/10W
R917	1-216-073-00	METAL CHIP	10K	5%	1/10W
R918	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R919	1-216-049-91	RES,CHIP	1K	5%	1/10W
R920	1-216-029-00	METAL CHIP	150	5%	1/10W
R921	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R922	1-216-037-00	METAL CHIP	330	5%	1/10W
R923	1-216-049-91	RES,CHIP	1K	5%	1/10W
R924	1-216-049-91	RES,CHIP	1K	5%	1/10W
R925	1-216-049-91	RES,CHIP	1K	5%	1/10W
R926	1-216-073-00	METAL CHIP	10K	5%	1/10W
R927	1-216-073-00	METAL CHIP	10K	5%	1/10W
R928	1-216-049-91	RES,CHIP	1K	5%	1/10W
R929	1-216-049-91	RES,CHIP	1K	5%	1/10W
R930	1-216-073-00	METAL CHIP	10K	5%	1/10W
R931	1-216-073-00	METAL CHIP	10K	5%	1/10W
R932	1-216-081-00	METAL CHIP	22K	5%	1/10W
R933	1-216-049-91	RES,CHIP	1K	5%	1/10W
R934	1-216-089-91	RES,CHIP	47K	5%	1/10W
R935	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R936	1-216-073-00	METAL CHIP	10K	5%	1/10W
R937	1-216-089-91	RES,CHIP	47K	5%	1/10W

MAIN **PS**

Ref. No.	Part No.	Description			Remark
R938	1-216-027-00	METAL CHIP	120	5%	1/10W
R939	1-216-073-00	METAL CHIP	10K	5%	1/10W
R940	1-216-073-00	METAL CHIP	10K	5%	1/10W
R941	1-216-105-91	RES,CHIP	220K	5%	1/10W
R942	1-216-089-91	RES,CHIP	47K	5%	1/10W
R943	1-216-105-91	RES,CHIP	220K	5%	1/10W
R944	1-216-093-00	METAL CHIP	68K	5%	1/10W
R945	1-216-089-91	RES,CHIP	47K	5%	1/10W
R946	1-216-089-91	RES,CHIP	47K	5%	1/10W
R947	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R948	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R949	1-216-073-00	METAL CHIP	10K	5%	1/10W
R950	1-216-021-00	METAL CHIP	68	5%	1/10W
R951	1-216-295-91	SHORT	0		
R952	1-216-073-00	METAL CHIP	10K	5%	1/10W
R953	1-216-025-91	RES,CHIP	100	5%	1/10W
R954	1-216-121-91	RES,CHIP	1M	5%	1/10W
R955	1-216-295-91	SHORT	0		
R956	1-216-097-91	RES,CHIP	100K	5%	1/10W
R957	1-216-025-91	RES,CHIP	100	5%	1/10W
R958	1-216-073-00	METAL CHIP	10K	5%	1/10W
R959	1-216-073-00	METAL CHIP	10K	5%	1/10W
R960	1-216-073-00	METAL CHIP	10K	5%	1/10W
R961	1-216-073-00	METAL CHIP	10K	5%	1/10W
R962	1-216-073-00	METAL CHIP	10K	5%	1/10W
R963	1-216-073-00	METAL CHIP	10K	5%	1/10W
R964	1-216-073-00	METAL CHIP	10K	5%	1/10W
R965	1-216-073-00	METAL CHIP	10K	5%	1/10W
R966	1-216-073-00	METAL CHIP	10K	5%	1/10W
R967	1-216-073-00	METAL CHIP	10K	5%	1/10W
R968	1-216-009-00	METAL CHIP	22	5%	1/10W
		< VARIABLE RESISTOR >			
RV901	1-241-393-21	RES, ADJ, METAL GLAZE 2.2K			
		< RELAY >			
RY607	1-515-614-11	RELAY			
RY608	1-515-614-11	RELAY			
RY609	1-515-614-11	RELAY			
RY610	1-515-614-11	RELAY			
RY611	1-515-614-11	RELAY			
RY612	1-515-614-11	RELAY			
		< VIBRATOR >			
X201	1-767-496-11	VIBRATOR, CERAMIC (16MHz)			
X401	1-767-433-11	OSCILLATOR, CRYSTAL (49.152MHz)			
X901	1-767-434-21	VIBRATOR, CRYSTAL (18.432MHz)			
X902	1-767-435-11	OSCILLATOR, CRYSTAL (46.08MHz)			

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Ref. No.	Part No.	Description			Remark
*	A-4542-493-A	PS BOARD, COMPLETE			
		**********			
	2-259-121-01	SCREW, TR			
		< CAPACITOR >			
C101	1-117-783-11	ELECT	13000uF	20%	16V
C104	1-126-023-11	ELECT	100uF	20%	25V
C105	1-126-023-11	ELECT	100uF	20%	25V
C106	1-126-027-11	ELECT	1000uF	20%	25V
C107	1-126-027-11	ELECT	1000uF	20%	25V
C111	1-126-964-11	ELECT	10uF	20%	50V
C112	1-126-927-11	ELECT	2200uF	20%	10V
C113	1-126-926-11	ELECT	1000uF	20%	10V
C114	1-126-963-11	ELECT	4.7uF	20%	50V
C117	1-126-967-11	ELECT	47uF	20%	50V
C118	1-126-967-11	ELECT	47uF	20%	50V
C119	1-164-046-11	CERAMIC	10PF	0.5PF	50V
C120	1-164-046-11	CERAMIC	10PF	0.5PF	50V
C121	1-136-165-00	FILM	0.1uF	5%	50V
C122	1-136-165-00	FILM	0.1uF	5%	50V
C133	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C134	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C135	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C136	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C137	1-162-294-31	CERAMIC	0.001uF	10%	50V
C138	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C139	1-162-294-31	CERAMIC	0.001uF	10%	50V
C140	1-162-294-31	CERAMIC	0.001uF	10%	50V
C141	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C142	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C143	1-162-303-11	CERAMIC	0.0033uF	30%	16V
		< CONNECTOR >			
* CN203	1-564-104-00	PIN, CONNECTOR (B3P-VH) 3P			
CN204	1-564-320-00	PIN, CONNECTOR (B2P-VH) 2P			
CN205	1-564-510-11	PLUG (MICRO CONNECTOR) 6P			
CN301	1-564-510-11	PLUG (MICRO CONNECTOR) 6P			
* CN302	1-564-243-11	PIN, CONNECTOR 6P			
		< DIODE >			
D102	8-719-933-39	DIODE HZS6C1L			
D103	8-719-933-39	DIODE HZS6C1L			
D104	8-719-911-19	DIODE 1SS119-25			
D107	8-719-911-19	DIODE 1SS119-25			
D108	8-719-911-19	DIODE 1SS119-25			
D109	8-719-911-19	DIODE 1SS119-25			
D110	8-719-935-57	DIODE HZS9A2LTD			
D111	8-719-935-57	DIODE HZS9A2LTD			
D119	8-719-986-50	DIODE HZS22-1LTA			
D120	8-719-933-39	DIODE HZS6C1L			
D121	8-719-986-50	DIODE HZS22-1LTA			
		< EARTH >			
* E3	1-537-738-21	TERMINAL, EARTH			

Ref. No.	Part No.	Description				Remark
		< IC >				
IC101	8-759-634-51	IC M5218AP				
IC102	8-759-632-07	IC M5237L				
IC103	8-759-245-79	IC TA79005S				
		< IC LINK >				
⚠PS101	1-532-840-21	LINK, IC (PRF1250, 1.25A)				
⚠PS102	1-532-839-11	LINK, IC (PRF1000, 1A)				
		< TRANSISTOR >				
Q101	8-729-141-83	TRANSISTOR 2SB1094-LK				
Q102	8-729-209-15	TRANSISTOR 2SD2012				
Q103	8-729-141-83	TRANSISTOR 2SB1094-LK				
Q104	8-729-141-83	TRANSISTOR 2SB1094-LK				
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q106	8-729-209-15	TRANSISTOR 2SD2012				
Q107	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q108	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		< RESISTOR >				
R101	1-249-409-11	CARBON	220	5%	1/4W	F
R102	1-249-409-11	CARBON	220	5%	1/4W	F
R103	1-247-843-11	CARBON	3.3K	5%	1/4W	
R104	1-247-843-11	CARBON	3.3K	5%	1/4W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R106	1-249-429-11	CARBON	10K	5%	1/4W	
R107	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R108	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R109	1-249-417-11	CARBON	1K	5%	1/4W	F
R110	1-249-417-11	CARBON	1K	5%	1/4W	F
R111	1-249-409-11	CARBON	220	5%	1/4W	F
R113	1-247-843-11	CARBON	3.3K	5%	1/4W	
R114	1-249-417-11	CARBON	1K	5%	1/4W	F
R117	1-249-437-11	CARBON	47K	5%	1/4W	
R119	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R120	1-249-429-11	CARBON	10K	5%	1/4W	
R121	1-249-429-11	CARBON	10K	5%	1/4W	
R122	1-249-417-11	CARBON	1K	5%	1/4W	F
R123	1-249-417-11	CARBON	1K	5%	1/4W	F
R124	1-249-411-11	CARBON	330	5%	1/4W	
R125	1-249-411-11	CARBON	330	5%	1/4W	
⚠R126	1-212-865-00	FUSIBLE	22	5%	1/4W	F
**********						
*	1-664-279-11	SW BOARD				
		*********				
		< CONNECTOR >				
CN4	1-564-321-00	PIN, CONNECTOR 2P				
		< SWITCH >				
⚠S1	1-572-267-51	SWITCH, PUSH (AC POWER)(1 KEY)(I/⏻)				
**********						

Ref. No.	Part No.	Description			Remark
*	A-4414-377-A	TR BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C1001	1-124-229-00	ELECT	33uF	20%	10V
C1002	1-124-229-00	ELECT	33uF	20%	10V
C1003	1-124-229-00	ELECT	33uF	20%	10V
C1004	1-124-229-00	ELECT	33uF	20%	10V
C1005	1-124-229-00	ELECT	33uF	20%	10V
C1006	1-124-229-00	ELECT	33uF	20%	10V
		< CONNECTOR >			
CN703	1-695-092-11	SOCKET, CONNECTOR 7P			
CN704	1-695-095-11	SOCKET, CONNECTOR 13P			
		< TRANSISTOR >			
Q601	8-729-216-22	TRANSISTOR 2SA1162-G			
Q602	8-729-230-49	TRANSISTOR 2SC2712-YG			
Q603	8-729-216-22	TRANSISTOR 2SA1162-G			
Q604	8-729-230-49	TRANSISTOR 2SC2712-YG			
Q605	8-729-216-22	TRANSISTOR 2SA1162-G			
Q606	8-729-230-49	TRANSISTOR 2SC2712-YG			
Q607	8-729-216-22	TRANSISTOR 2SA1162-G			
Q608	8-729-230-49	TRANSISTOR 2SC2712-YG			
Q609	8-729-216-22	TRANSISTOR 2SA1162-G			
Q610	8-729-230-49	TRANSISTOR 2SC2712-YG			
Q611	8-729-216-22	TRANSISTOR 2SA1162-G			
Q612	8-729-230-49	TRANSISTOR 2SC2712-YG			
Q613	8-729-216-22	TRANSISTOR 2SA1162-G			
Q614	8-729-230-49	TRANSISTOR 2SC2712-YG			
Q615	8-729-216-22	TRANSISTOR 2SA1162-G			
Q616	8-729-230-49	TRANSISTOR 2SC2712-YG			
		< RESISTOR >			
R697	1-216-295-91	SHORT	0		
R698	1-216-045-00	METAL CHIP	680	5%	1/10W
R699	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R700	1-216-295-91	SHORT	0		
R701	1-216-045-00	METAL CHIP	680	5%	1/10W
R702	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R703	1-216-295-91	SHORT	0		
R704	1-216-045-00	METAL CHIP	680	5%	1/10W
R705	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R706	1-216-295-91	SHORT	0		
R707	1-216-045-00	METAL CHIP	680	5%	1/10W
R708	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R709	1-216-295-91	SHORT	0		
R710	1-216-045-00	METAL CHIP	680	5%	1/10W
R711	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R712	1-216-295-91	SHORT	0		
R713	1-216-045-00	METAL CHIP	680	5%	1/10W
R714	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R715	1-216-013-00	METAL CHIP	33	5%	1/10W
R716	1-216-045-00	METAL CHIP	680	5%	1/10W
R717	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R718	1-216-013-00	METAL CHIP	33	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

TR VOL

Ref. No.	Part No.	Description			Remark
R719	1-216-045-00	METAL CHIP	680	5%	1/10W
R720	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R739	1-216-073-00	METAL CHIP	10K	5%	1/10W
R740	1-216-073-00	METAL CHIP	10K	5%	1/10W
R741	1-216-073-00	METAL CHIP	10K	5%	1/10W
R742	1-216-073-00	METAL CHIP	10K	5%	1/10W
R743	1-216-073-00	METAL CHIP	10K	5%	1/10W
R744	1-216-073-00	METAL CHIP	10K	5%	1/10W
R745	1-216-073-00	METAL CHIP	10K	5%	1/10W
R746	1-216-073-00	METAL CHIP	10K	5%	1/10W
R747	1-216-073-00	METAL CHIP	10K	5%	1/10W
R748	1-216-073-00	METAL CHIP	10K	5%	1/10W
R749	1-216-073-00	METAL CHIP	10K	5%	1/10W
R750	1-216-073-00	METAL CHIP	10K	5%	1/10W
R751	1-216-073-00	METAL CHIP	10K	5%	1/10W
R752	1-216-073-00	METAL CHIP	10K	5%	1/10W
R753	1-216-073-00	METAL CHIP	10K	5%	1/10W
R754	1-216-073-00	METAL CHIP	10K	5%	1/10W
**********					
*	1-664-280-11	VOL BOARD			
		**********			
		< CAPACITOR >			
C256	1-136-165-00	FILM	0.1uF	5%	50V
		< CONNECTOR >			
CN207	1-691-769-21	PLUG (MICRO CONNECTOR) 7P			
		< VARIABLE RESISTOR >			
RV251	1-225-434-11	RES, VAR, CARBON 10K (MASTER VOLUME)			
**********					
		MISCELLANEOUS			
		**********			
13	1-773-232-11	WIRE (FLAT TYPE) (25 CORE)			
19	1-769-078-51	LEAD (WITH CONNECTOR) (2 CORE)			
⚠62	1-776-095-11	CORD, POWER			
FL251	1-517-645-11	INDICATOR TUBE, FLUORESCENT			
⚠T1	1-431-190-11	TRANSFORMER, POWER			
**********					
		ACCESSORIES & PACKING MATERIALS			
		**********			
	1-475-702-11	REMOTE COMMANDER (RM-EP90)			
	1-590-925-31	CORD, CONNECTION (AUDIO 100cm)			
	3-862-881-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH,SPANISH,PORTUGUESE)			
	3-862-881-21	MANUAL, INSTRUCTION (GERMAN,DUTCH,SWEDISH,ITALIAN)			
	4-981-643-01	COVER, BATTERY (FOR RM-EP90)			
**********					

Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-621-773-95	SCREW +B 2.6X6	
#2	7-685-880-09	SCREW +BVTT 4X6 (S)	
#3	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
#4	7-682-548-09	SCREW (3X8)	

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Replace only with part number specified.

9-922-796-11

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